



Global Operations, Environment, Health & Safety

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Via electronic mail and express delivery

February 22, 2019

Mr. Christopher Smith  
U.S. Environmental Protection Agency, Region I  
Office of Site Remediation and Restoration  
5 Post Office Square - Suite 100  
Boston, MA 02109-3912

**Re: GE-Pittsfield/Housatonic River Site  
Silver Lake Area (GECD600)  
2018 Annual Monitoring Report**

Dear Mr. Smith:

Enclosed is GE's Annual Monitoring Report for 2018 for the Silver Lake Area. This report has been prepared to describe and present the results of the post-construction monitoring activities and follow-up response actions performed in 2018 at the Silver Lake Area.

Please contact Andy Silfer or me with any questions or comments regarding the enclosed report.

Sincerely yours,

Kevin G. Mooney  
Senior Project Manager – Environmental Remediation

Enclosure

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General Electric Company  
Pittsfield, Massachusetts

# 2018 ANNUAL MONITORING REPORT

Silver Lake Area

February 2019

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## 2018 ANNUAL MONITORING REPORT

### Silver Lake Area

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General Electric Company  
Pittsfield, Massachusetts

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February 2018

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## ABBREVIATIONS

CD	Consent Decree
EPA	United States Environmental Protection Agency
ERE	environmental restriction and easement
FCR	Final Completion Report
GE	General Electric Company
LWD	large woody debris
MassDEP	Massachusetts Department of Environmental Protection
NAPL	non-aqueous-phase liquid
ND	non-detect
NRRE	natural resource restoration/enhancement
PCB	polychlorinated biphenyls
PEDA	Pittsfield Economic Development Authority
PRSC Plan	Post-Removal Site Control Plan
RAA	Removal Action Area
RPMM Plan	Restoration Project Monitoring and Maintenance Plan
Site	GE-Pittsfield/Housatonic River Site
SOW	Statement of Work for Removal Actions Outside the River
Tetra Tech	Tetra Tech, Inc.
Trustees	natural resource trustees
TSS	total suspended solids
USGS	U.S. Geological Survey

## 1 INTRODUCTION

Pursuant to the requirements set forth in the October 2000 Consent Decree (CD) for the GE-Pittsfield/Housatonic River Site (the Site) and the accompanying Statement of Work for Removal Actions Outside the River (SOW), the General Electric Company (GE) implemented a Removal Action at the Silver Lake Area Removal Action Area (RAA) between July 2012 and December 2013. The Removal Action implemented at the Silver Lake Area included removal of some sediments, installation of a sediment cap and associated shoreline armor layer, removal/replacement of soil in certain areas on the banks and adjacent areas, and restoration of the excavated areas, as well as the implementation of certain natural resource restoration/enhancement (NRRE) measures in various areas around the lake. The CD and SOW require various post-construction monitoring and maintenance activities for the completed Removal Action and the NRRE measures. Following completion of the removal action, GE developed a Post-Removal Site Control (PRSC) Plan and a Restoration Project Monitoring and Maintenance (RPMM) Plan and included those plans in the Final Completion Report (FCR) for the Silver Lake Area Removal Action (Arcadis 2015), which was submitted to the United States Environmental Protection Agency (EPA) on May 20, 2015 and approved by EPA on June 22, 2015.

Given the large number and diverse nature of the areas and items that are subject to monitoring and maintenance activities at the Silver Lake Area, the FCR requires GE to submit an Annual Monitoring Report to EPA, with copies to the natural resource trustees (Trustees) and Massachusetts Department of Environmental Protection (MassDEP), detailing the performance and results of all of the PRSC and RPMM activities performed during the prior year. This 2018 Annual Monitoring Report has been prepared to summarize the inspection, monitoring, maintenance, repair, and re-planting activities that GE performed during 2018 at the Silver Lake Area. Specifically, this report summarizes the following PRSC and RPMM activities conducted at the Silver Lake Area during 2018:

- Section 2 – Inspection and maintenance of the non-NRRE components of the remediation, including the shoreline armor system (but excluding the shrub-scrub island cap, discussed separately in Section 3), the non-NRRE plantings, the backfilled/restored areas adjacent to Silver Lake, and specified ancillary items (namely, observation for signs of non-aqueous-phase liquid [NAPL] and the presence and condition of catch-and-release advisory signs on the banks);
- Section 3 – Monitoring and maintenance of the NRRE measures;
- Section 4 – Sediment cap system monitoring;
- Section 5 – Surface water sampling; and
- Section 6 – Environmental restriction and easement (ERE) and Conditional Solution inspection activities.

Section 7 summarizes the future monitoring requirements for the Site.

In addition, various tables, figures, and appendices are attached to this report and provide more detailed information. Figure 1-1 illustrates the areas/items that were monitored in 2018, and Appendix A contains the trip reports on the individual monitoring events performed in 2018, which are incorporated by reference throughout the text of this report. The specific trip reports included in Appendix A are as follows:

2018 Annual Monitoring Report  
Silver Lake Area

- June 18, 2018 – Spring 2018 Inspection of Shoreline Armor System, Catch-and-Release Signs, and Non-Natural Resource Restoration / Enhancement Plantings (conditionally approved by EPA on July 9, 2018);
- June 18, 2018 – Report on Spring 2018 Inspection of Natural Resource Restoration/Enhancement Measures (conditionally approved by the Trustees on September 17, 2018);
- September 28, 2018 – Summer 2018 Inspection of Shoreline Armor System, Backfilled/Restored Areas, Potential NAPL Presence, and Non-Natural Resource Restoration / Enhancement Plantings (conditionally approved by EPA on December 18, 2018);
- October 26, 2018 – Summer 2018 Inspection of Natural Resource Restoration / Enhancement Measures (conditionally approved by the Trustees on February 21, 2019); and
- December 14, 2018 – Report on 2018 Monitoring of Cap Thickness and Integrity, Cap Isolation Layer, and Deposition on Cap Surface (conditionally approved by EPA on February 14, 2019).

## 2 2018 INSPECTIONS OF POST-REMOVAL SITE CONTROL COMPONENTS

The PRSC Plan included in the FCR required the following post-remediation inspections of non-NRRE components in the Silver Lake Area be performed in 2018:

- Semi-annual (spring and summer) inspections of the shoreline armor system;
- Semi-annual (spring and summer) inspections of the of certain non-NRRE plantings (trees) that were re-planted in 2016;
- Annual (summer) inspection of the backfilled/restored areas that were subject to soil removal and replacement activities or were otherwise disturbed by the remediation; and
- Annual (spring or summer, as noted below) inspection of non-NRRE ancillary items (i.e., observations of NAPL, if any, and inspections of the catch-and-release advisory signs on the banks).<sup>1</sup>

Figure 2-1 illustrates these non-NRRE components subject to inspection. The areas/items identified for follow-up action during the summer 2018 inspection (i.e., the last event of the year) are summarized in Table 2-1, and the one specific area identified for follow-up is illustrated on Figure 2-1.

### 2.1 Spring 2018 Inspection

In accordance with the PRSC Plan included in the FCR, the spring 2018 inspection evaluated the shoreline armor system, the catch-and-release signs, and the non-NRRE plantings.<sup>2</sup> GE conducted the spring inspection on May 15, 2018, with EPA representatives in attendance.<sup>3</sup> A report on the spring non-NRRE inspection was submitted to EPA on June 18, 2018, and was conditionally approved by EPA in a letter dated July 9, 2018. A copy of the June 18, 2018 trip report is included in Appendix A. The inspection activities and results described in those documents are summarized in the remainder of this section.

#### 2.1.1 Spring Shoreline Armor System Inspection

The spring 2018 inspection included visual observations of the shoreline armor system to assess the effects, if any, of any shoreline wave and/or wind action on that system, including the presence of any significant erosion (e.g., slope failure, ruts, gullies, washouts, or sloughing). In addition, as required by the PRSC Plan in the FCR, this inspection included observation of the outfalls that were protected and/or maintained during remediation activities (as listed and shown on Drawing 1 of Appendix F of the FCR) to identify any evidence of erosion, damage, or other conditions that could impair discharges from these outfalls.

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<sup>1</sup> The PRSC Plan also required a post-remediation inspection in 2018 of the sediment cap installed in Silver Lake in 2013; that program, including inspection results, is summarized in Section 4.

<sup>2</sup> As recommended by EPA in a September 3, 2015 conditional approval letter, the annual inspection of the catch-and-release signs on the banks has been shifted from the late summer/early fall inspection to the spring inspection.

<sup>3</sup> Representatives of the Trustees were also in attendance to participate in the NRRE inspection performed the same day, as discussed in Section 3.



No areas within the shoreline armor system were noted with significant erosion. During the inspection of the outfalls that were protected and/or maintained during remediation activities, no significant erosion was observed, and no conditions were observed that could impair discharges from the outfalls.

During the spring 2018 inspection, GE and EPA evaluated the large woody debris (LWD) that had been previously discussed in trip reports from GE and conditional approval letters from EPA. During the spring 2018 monitoring event, some additional exposed rebar was observed at eight locations, either due to a missing safety cap or to new exposure. As such, in its June 18, 2018 trip report, GE proposed potential methods for addressing the additional exposed rebar and EPA concurred with GE's proposed plan in its July 9, 2018 conditional approval letter.

### **2.1.2 Spring Inspection of Ancillary Items**

The spring 2018 inspection included the annual inspection of the catch-and-release signs, consisting of visual observation of these signs posted along the northern and eastern banks of Silver Lake to confirm that they remain in place and determine whether any of them were damaged or had fallen down. All ten catch-and-release signs were observed to be present and in good condition.

### **2.1.3 Spring Non-NRRE Plantings Monitoring**

Although the general two-year monitoring period for the non-NRRE plantings ended in 2015, GE was required, based on re-planting required since completion of construction in 2013, to continue inspections in 2018 for certain plantings outside of the NRRE areas. Specifically, the spring 2018 non-NRRE plantings monitoring included observation of two Fraser fir trees re-planted on Parcel I9-9-28 in the spring of 2016. As described in GE's June 2018 trip report (included in Appendix A), the two Fraser fir trees were observed to be in good health.

Although not specifically required, the spring 2018 inspection also included observations in the non-NRRE planting areas of the presence and extent of invasive plant species or non-planted species hindering development of planted shrubs. During the spring 2018 inspection, trace invasive species were observed, and they were addressed throughout 2018 as part of GE's ongoing invasive species control program. A summary of the 2018 treatments performed within this ongoing program is provided in Table 2-2.

## **2.2 Summer 2018 Inspection**

In accordance with the PRSC Plan included in the FCR, the summer 2018 inspection included:

- Second semi-annual inspection of the shoreline armor system and the non-NRRE plantings for 2018; and
- Annual inspections of the backfilled/restored and other disturbed areas and the potential presence of NAPL.

GE conducted the summer 2018 inspection on August 29, 2018, with EPA representatives in attendance.<sup>4</sup> It was noted that the repair/maintenance activities identified during the spring 2018 inspection (as described in the June 18, 2018 trip report included in Appendix A) had been performed prior to the summer 2018 inspection, including repair/maintenance of the LWD (except at one inaccessible location) and continuation of the general invasive species control program. A trip report on the summer 2018 inspection (Appendix A) was submitted to EPA on September 28, 2018, and conditionally approved by EPA in a letter dated December 18, 2018.

The summer 2018 inspection activities and results are summarized in this section.

### **2.2.1 Summer Shoreline Armor System Inspection**

The summer 2018 inspection did not identify areas of significant erosion within the shoreline armor system. During the 2018 inspection of the outfalls that were protected and/or maintained during remediation activities, no signs of significant erosion were observed, and no conditions were observed that could impair discharges from the outfalls. However, it was observed that armor stone on the bank above outfall SL-OF-09 has been displaced and exposed the underlying geotextile fabric (Area 1 on Table 2-1 and Figure 2-1). In response, in November 2018, to reduce the potential for bank erosion in this area, GE anchored the geotextile fabric and placed additional in-kind armor stone to again cover the fabric. This repaired area will be re-evaluated during the next inspection, scheduled for summer 2019.

As noted above, GE completed the maintenance of the LWD in summer 2018 prior to the August inspection, except at one location that was inaccessible from land, as noted in the September 28, 2018 trip report. GE does not anticipate further routine maintenance to the LWD. However, if exposed rebar is noted during future inspections and is determined to be a potential threat to public safety, GE will address the exposed rebar as outlined in the June 2018 trip report; or if LWD accumulates at the outlet from Silver Lake to the Housatonic River, GE will discuss with EPA the need to remove such LWD from the outlet.

### **2.2.2 Summer Inspection of Backfilled/Restored Adjacent to Silver Lake and Other Disturbed Areas**

The summer 2018 inspection included the annual inspection of the backfilled/restored and other disturbed areas. Specifically, the inspection included visual observations of the backfilled/restored areas and other disturbed areas for the following:

- Evidence of erosion;
- Evidence of depressions and/or surface water ponding;
- Any areas where excessive settlement had occurred relative to the surrounding areas;
- Any drainage or growth problems;
- Any stressed or sparse cover; and

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<sup>4</sup> Representatives of the Trustees were also in attendance to participate in the NRRE inspection performed on the same day, as discussed in Section 3.

- Other conditions that could jeopardize the performance of the completed remediation actions.

No instances of minor erosion of surface soils were observed and no areas of sparse vegetation were observed during the summer 2018 inspection of backfilled/restored and other disturbed areas.

### **2.2.3 Summer Inspection of Ancillary Items**

The summer 2018 inspection also included the annual visual observation of the banks of Silver Lake, as well as the lake surface, to identify any apparent bank seeps of NAPL or NAPL sheens. There were no apparent seeps of NAPL or NAPL sheens observed during the summer 2018 inspection.

### **2.2.4 Summer Non-NRRE Plantings Monitoring**

The summer 2018 inspection included observation of the two Fraser firs re-planted on Parcel I9-9-28 in spring of 2016 (as described above and in the June 2018 trip report [Appendix A]). During the summer 2018 inspection, the two Fraser firs were observed to be alive and healthy. The summer 2018 inspection constituted the final monitoring event of the two-year monitoring period for these trees; and given the health of the trees, no further action or monitoring is required.

In addition to the observations of the plantings, although not specifically required, the summer 2018 inspection included observations of the presence and extent of invasive plant species in the non-NRRE planting areas visited. During the summer 2018 inspection, trace invasive species were observed. These invasive and/or non-planted species were addressed throughout 2018 as part of GE's ongoing invasive species control program. As noted above, a summary of the 2018 treatments performed within this ongoing program is provided in Table 2-2.

## **2.3 Summary of Remaining Follow-up Actions for Post-Removal Site Control Components**

A summary of the non-NRRE items requiring follow-up action after the summer 2018 inspection, including the follow-up actions completed or slated to be performed in the future, is provided in Table 2-1 and summarized in Sections 7.1 through 7.3. As documented in the September 28, 2018 trip report (Appendix A) and in Table 2-1, the repair/maintenance activities identified based on the spring and summer 2018 inspections were performed throughout summer and fall 2018. These included addressing the LWD, addressing the displaced armor stone observed near SL-OF-09, and continuing the invasive species control program.

Based on the observations made during the summer 2018 inspection, GE's consultant administering the general invasive species control program (Haupt) will visit the site in spring 2019 to determine whether to continue the general invasive species control program for the non-NRRE planting areas in 2019 to address any trace invasive species and non-planted species in those areas. As stated in Table 2-1, GE will submit an informal e-mail or memo to EPA summarizing the findings of that informal re-evaluation.

### 3 2018 INSPECTIONS OF NATURAL RESOURCE RESTORATION / ENHANCEMENT MEASURES

The RPMM Plan included in the FCR required the following inspections of the NRRE measures installed in the Silver Lake Area be performed in 2018:

- Semi-annual (spring and summer) inspections of the cap placed over the shrub-scrub island in conjunction with the semi-annual inspections of the shoreline armor system (described in Section 2); and
- Annual inspection (in summer) of the plantings installed as part of NRRE measures.

Figure 3-1 illustrates the NRRE features subject to inspection. The areas/items identified for follow-up action during the summer 2018 inspection (i.e., the last event of the year) are summarized in Table 3-1, and the one specific area identified for follow-up is shown on Figure 3-1.

#### 3.1 Spring 2018 Shrub-Scrub Island Cap Inspection

In accordance with the requirements in the RPMM Plan, the spring 2018 NRRE inspection focused on the cap placed over the shrub-scrub island. GE conducted the spring inspection on May 15, 2018, with representatives of EPA and the Trustees also in attendance, in conjunction with the spring non-NRRE inspection of the shoreline armor system.<sup>5</sup>

The inspection of the shrub-scrub island cap consisted of visual observations to identify any areas where the cap may be eroding (e.g., in areas along the edge of water that do not have armor stone) or experiencing any other conditions that could jeopardize the performance of the cap. A trip report on the spring NRRE inspection was submitted to the Trustees on June 18, 2018 (Appendix A), and the Trustees provided conditional approval of it in a letter dated September 17, 2018. As indicated in the June 18, 2018 trip report (Appendix A), no areas within the scrub-shrub island cap were observed with significant erosion or other conditions that could jeopardize the performance of the cap.

#### 3.2 Summer 2018 Inspection

In accordance with the requirements listed in the RPMM Plan included in the FCR, the summer 2018 inspection included monitoring of the cap placed over the shrub-scrub island and the NRRE plantings. GE conducted the summer inspection on August 27, 2018, with EPA and Trustee representatives in attendance. A trip report describing the summer 2018 inspection was submitted to the Trustees on October 26, 2018 (Appendix A), and the Trustees provided conditional approval of that report on February 21, 2019.

The summer 2018 NRRE inspection and results are summarized in the remainder of this section.

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<sup>5</sup> The shoreline armor protection system and the non-NRRE plantings were also inspected at this time as part of non-NRRE monitoring activities, as discussed in Section 2.

### **3.2.1 Summer Shrub-Scrub Island Cap Inspection**

The summer 2018 inspection of the shrub-scrub island cap was performed in conjunction with the summer non-NRRE inspection of the shoreline armor system. As indicated in the October 26, 2018 trip report (Appendix A), no areas within the scrub-shrub island cap were observed with significant erosion or other conditions that could jeopardize the performance of the cap.

### **3.2.2 Summer NRRE Plantings Monitoring**

The summer 2018 inspection of the NRRE plantings included a qualitative meander survey and a quantitative assessment of the vegetation within the monitoring plots. A certified arborist was present during this inspection. As described in the October 26, 2018 trip report (Appendix A), the following observations were noted during this inspection:

- Based on the qualitative assessment, the majority of the grass planted along the walking path and the majority of the planted trees and shrubs appeared to be healthy, with no evidence of significant damage from trespassing or herbivory.
- While the qualitative assessment indicated that the majority of the planted trees and shrubs appeared to be healthy, the arborist indicated that the red oak and maple trees along the eastern bank of Silver Lake, while generally healthy, would benefit from continued fertilization (Area 1 on Figure 3-1 and in Table 3-1). The status and health of these trees are slated to be re-evaluated in 2019.<sup>6</sup>
- The obligate wetland plants (i.e., buttonbush) on the shrub-scrub island were observed to be showing some improvement from previous years, although some stunted growth was observed, likely due to historic period(s) of stress. The red-osier dogwood specimens were again observed to be growing healthily. Thus, GE concluded that no re-planting or maintenance of the plantings in this area is necessary.
- No herbivory was observed on the northern arrowwood and nannyberry viburnum shrubs on the northern shoreline where minor beetle herbivory had been observed in spring 2017. The presence of herbivory in this area will be re-evaluated in 2019.
- The topsoil and an herbaceous wetland species seed mix that had been placed in the void spaces of the armor stone around the periphery of the shrub-scrub island were generally well established.
- The quantitative assessment of trees and shrubs in the designated monitoring plots indicated no dead or missing trees, but did show a shortage of some shrubs.<sup>7</sup> However, based on the results from the monitoring plots, the average percent survival of trees and shrubs in each monitoring area was well above the applicable Performance Standard of 80% survival.

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<sup>6</sup> As discussed in Section 7.4, although no formal NRRE inspection is scheduled for 2019 under the RPMM Plan, GE plans to monitor the NRRE vegetation informally and qualitatively in 2019 during the scheduled non-NRRE inspection of the backfilled/restored areas.

<sup>7</sup> It should be noted that, for many monitoring plots, the dense cover of shrubs made identification of individual plants difficult, and thus some shrubs may have been missed in the counts.

- A total of one tree and 11 shrubs in the monitoring plots were observed to be alive but stressed, including:
  - Two shrubs (red-osier dogwood, winterberry holly) in the I9-10-9-1 monitoring plot;
  - One shrub (winterberry holly) in the I9-10-9-2 monitoring plot;
  - Two shrubs (choke cherry, black chokeberry) in the I9-9-36-4 monitoring plot;
  - One shrub (button bush) in the SSI-1 monitoring plot;
  - Two shrubs (nannyberry viburnum, black chokeberry) in the I9-9-35-1 monitoring plot; and
  - One tree (black willow) and three shrubs (red-osier dogwood, winterberry holly, northern arrowwood) in the I9-9-35-4 monitoring plot.
- The results of the quantitative assessment of percent cover by native herbaceous species showed that the percent cover by native herbaceous species in all monitoring areas, based on the results from the monitoring plots within them, meet the Performance Standard of 100% (outside the foliar cover of the trees).
- Invasive species were again observed in some of the NRRE areas but were qualitatively observed to generally be less than 5% cover, with the exception of one monitoring plot (SSI-2), which had an invasive species cover of 5-10%. After averaging the results from the monitoring plots, no monitoring area had an invasive species cover greater than the Performance Standard of 5%. Of note, water chestnut was observed in Silver Lake during the summer 2018 inspection. A large population of this aggressive aquatic invasive species was observed upgradient in the retention pond hydraulically connected to Silver Lake through the Pittsfield Economic Development Authority (PEDA) outfall. As noted in Table 3-1, GE removed the water chestnut from Silver Lake during the September 11 invasive species control event and will monitor this species during future site visits conducted as part of the general invasive species control program for the NRRE areas. GE plans to continue the general invasive species control program through 2019 and likely 2020.

No re-planting was deemed to be necessary, but the stressed plantings will continue to be monitored for their condition and survival, including quantitative assessment of their status during the next NRRE inspection in 2020.

### 3.3 Summary of Follow-up Actions for NRRE Measures

A summary of the NRRE items requiring follow-up actions based on the observations made during the summer 2018 inspection, including the follow-up actions completed or slated to be performed in the future, is provided in Table 3-1 and summarized in Section 7.4. The follow-up actions include continued fertilization of the large trees planted along the eastern bank of Silver Lake, informal re-evaluation of herbivory on certain shrubs in 2019, continuation of the general invasive species control program in NRRE areas in 2019 and likely 2020, and continuation of the monitoring program outlined in the RPMM Plan.

## 4 CAP SYSTEM MONITORING AND MAINTENANCE

In accordance with the PRSC Plan included in the FCR, the 2018 post-construction monitoring program for the sediment cap installed in Silver Lake in 2013 consisted of: (1) monitoring to assess cap thickness and integrity (2) sampling of the isolation layer to assess migration of polychlorinated biphenyls (PCBs), if any, from the underlying sediments; (3) evaluation of the isolation layer samples to evaluate PCB deposition on the surface of the cap; and (4) follow-up visual monitoring of cap integrity. On September 18-20, 2018, GE performed the 2018 post-remediation monitoring of the Silver Lake cap to assess cap thickness and integrity and collection of cap material cores, with a follow-up inspection on October 4, 2018 to visually monitor the cap integrity. A report on these monitoring activities was submitted to EPA on December 14, 2018, and a copy of the report is included in Appendix A. That report was conditionally approved by EPA by letter dated February 14, 2019.

The cap system monitoring program included collection of cores at 21 locations, and processing of ten of those collected cores for PCB analysis, and visual inspection using an underwater camera. The performance and results of the 2018 cap monitoring are summarized below. The future monitoring activities for the cap system are described in Section 7.5.

### 4.1 Cap Thickness Monitoring and Follow-up Actions

In accordance with the PRSC Plan included in the FCR, the cap monitoring program requires that cap material cores be collected annually for five years to assess the in-place cap thickness at the 21 locations shown on Figure 4-1.<sup>8</sup> If these periodic inspections of cap thickness and integrity indicate that the design standards for the cap have not been achieved and maintained, GE is required to evaluate and propose to EPA appropriate corrective measures to achieve those design standards, and must implement such measures upon approval by EPA.

GE conducted the fifth of these annual monitoring events to assess cap thickness and integrity in September and October 2018. The visual inspection with the underwater camera did not observe any signs of cap failure or compromise, and the observations made indicated that the surface of the cap appeared to be of a generally consistent nature, without significant signs of depressions and/or holes.

During the September 2018 inspection, cores were collected at the locations shown on Figure 4-1 and the thickness of the cap material in the cores was measured. As described in the December 14, 2018 report, the cap thickness measurements indicate the cap thickness met or exceeded the design Performance Standard of 14 inches at all locations except three (SL-CAP-07, -11, and -17). At two of those three locations (SL-CAP-07 and -17), the results indicated a thickness of slightly less than 14 inches (13.25 and 13.50 inches, respectively); and at the third location (SL-CAP-11), the results indicated a thickness within 1.5 inches of the criterion (12.50 inches), with sediment deposition at the same location of 1.5 inches. However, in reviewing these data, it is important to recognize that the EPA-approved design of the 14-inch Silver Lake cap included two operative layers totaling 12 inches (a 6-inch bioturbation layer and a 6-inch isolation layer) plus a sacrificial mixing layer of two inches. At all locations monitored in 2018, including the three with total

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<sup>8</sup> These locations are situated outside the near-shore areas in which the armor stone layer was placed. The monitoring of the shoreline armor stone layer was discussed in Section 2.



thickness less than 14 inches, the thickness of the cores (which did not include any sediments with the visual characteristics of a mixing layer) exceeded the 12-inch design thickness for the operative layers of the cap. Moreover, the overall average thickness of the cores at all locations in the lake was approximately 16 inches. Finally, it was noted that the cores had additional post-construction deposition of sediments (up to 2.5 inches) on top of the measured cap.

In the December 14, 2018 report (Appendix A), GE concluded, based on the following factors, that there is no need to take any corrective action to increase the thickness of the cap:

- The achievement of the 14-inch Performance Standard at 18 of the 21 monitoring locations (86%) in 2018;
- The achievement of the design standards for the two operative layers of the cap (12 inches including a 6-inch bioturbation layer and a 6-inch isolation layer and excluding the sacrificial mixing layer) at **all** of the monitored locations;
- The expected variability of the cap thickness over time;<sup>9</sup>
- An overall average cap thickness well above 14 inches;
- Visual observations of cap integrity; and
- The presence of ongoing deposition on top of the cap.

Through its February 14, 2019 conditional approval letter, EPA approved that conclusion.

As discussed in Section 7.5, GE proposed in its report to perform another cap monitoring event in five years (i.e., in 2023), including another assessment of the cap thickness; and in its conditional approval letter, EPA approved that proposal with a minor addition.

## 4.2 Isolation Layer Monitoring

In accordance with the PRSC Plan included in the FCR, the cap monitoring program required sampling of the cap isolation layer one year and five years after construction in 2013 to assess migration of PCBs, if any, from the underlying sediments. If the sampling results indicate that the cap isolation layer is not performing in general accordance with the predictions on which the cap design was based in terms of effectively controlling migration of PCBs from the underlying sediments through that layer into the surface water of the lake, GE must evaluate appropriate corrective measures, submit the results of that evaluation to EPA for approval, and implement any such measures approved by EPA.

GE conducted the Year 5 monitoring event for the isolation layer in September 2018. Ten of the cap material cores collected to assess thickness (as discussed in Section 4.1) were processed into three intervals and samples were submitted for PCB analysis (locations analyzed are shown on Figure 4-1). These three intervals were the bottom approximate two-inch layer of the observed cap material taken just above the apparent interface with the underlying sediment (referred to herein as the Mixing interval, even though, as noted above, that interval did not show the visual characteristics of a mixing layer in any of the cores), the

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<sup>9</sup> The December 2018 trip report (Appendix A) included a figure showing the cap thickness measurements at each location since cap construction was complete (i.e., in 2013, 2014, 2015, 2016, 2017, and 2018).

top one inch of the core (TOP layer), and the remaining portion of the core between those increments (REM layer).

As described in the December 14, 2018 report, PCB concentrations in the lowest (Mixing) interval samples decreased, on average, since the completion of cap installation. Seven of the ten locations sampled in 2018 had lower PCB concentrations than were observed in 2013 (immediately post-construction event) and 2014 (Year 1 event), and two of the remaining three locations had lower PCB concentrations than were observed in 2013 (although slightly higher than concentrations observed in 2014). Only at one location, SL-CAP-20, was the 2018 Mixing interval concentration higher than the concentration observed in that interval in 2013, and that increase was not substantial (0.75 parts per million [ppm] to 1.13 ppm). These data, including the decrease in average PCB concentration in the Mixing interval over time, indicates that there has been no appreciable gain of PCBs within the lower level of the cap, as would be expected if PCB migration were occurring from the underlying native sediment.

In the cap material REM interval, the 2018 PCB concentrations were non-detect (ND) or below 0.1 ppm (with the exception of approximately 0.24 ppm at SL-CAP-04). PCBs were detected in three REM samples collected in 2018, compared to three in 2014 and four post-placement in 2013. The average concentration in 2018 (0.05 ppm) is similar to that observed in 2014 (0.04 ppm), and lower than the average associated with samples collected in 2013 immediately after cap construction (0.17 ppm), indicating no gain of PCBs within the cap as would be expected if PCB migration into the cap material were occurring.

PCB concentrations in the surface layer samples (TOP interval) decreased, on average, since the first-year post-construction monitoring event in 2014. Although the PCB concentrations in the surface layer samples collected in 2018, like those collected in 2014, increased from those in the samples collected immediately after cap installation, the data suggest that those increases were most likely due to deposition (discussed below), not migration from the underlying sediments. Four of the locations sampled in 2018 had slightly higher surface sediment PCB concentrations than in 2014 or had detectable PCB concentrations where they were previously not detected. At three of those locations, PCBs were not detected in the underlying REM interval; and at the other location, the PCB concentration in the REM interval was considerably lower than that observed in the TOP interval. Together, these data, along with the data from the Mixing interval, show no PCB concentration gradient that would suggest the migration of PCBs through the isolation layer of the cap.

Overall, the PCB results from 2013, 2014, and 2018 provide no indication that the isolation layer is failing to perform in general accordance with the predictions on which the cap design was based in terms of effectively limiting the migration of PCBs from the underlying sediments through that layer into the surface water of the lake. Thus, GE concluded that no response actions for the isolation layer are necessary at this time; and EPA approved that conclusion through its February 14, 2019 conditional approval letter. As mentioned above and discussed in Section 7.5, GE proposed, and EPA approved, a plan to perform another monitoring event in five years, which will include another assessment of the isolation layer.

### 4.3 Evaluation of PCB Deposition on Cap Surface

The Performance Standard for monitoring of the deposition of PCBs on the cap surface requires GE to evaluate, to the extent practicable, whether deposited PCBs detected on the surface of the cap (as opposed to migration of PCBs through the cap from the underlying sediments) are attributable to sources other than

erosion or surface runoff from the banks or currently known discharges of PCBs into the lake from NPDES-permitted or other outfalls. If the surface PCBs can be attributed to such other sources and those sources are located within property owned by GE, GE must evaluate potential source control measures and submit a report on that evaluation to EPA for review and approval, along with a recommendation for any appropriate source control measures. Otherwise, no further response actions are required to address the deposition of PCBs on the surface of the cap (except for any actions to address erosion or required by the CD covenant reopeners).

As discussed above, the PCB results from the surface layer (TOP interval), in conjunction with those from the Mixing and REM intervals, indicate that PCBs have deposited on the surface of the cap. However, there does not appear to be an identifiable potential source or sources of those deposited PCBs, as there is no apparent pattern or relationship between the detections and particular types of locations. In particular, the PCBs on the surface of the cap cannot be attributed to any identifiable sources other than erosion or surface runoff from the banks or currently known discharges of PCBs into the lake from the NPDES-permitted outfall or other outfalls. Since the surface PCBs cannot be attributed to such other sources, no source control measures were proposed, and GE concluded that no further response actions are necessary to address the deposition of PCBs on the surface of the cap. EPA approved that conclusion through its February 14, 2019 conditional approval letter. As mentioned above and discussed in Section 7.5, GE proposed, and EPA approved, a plan to perform another monitoring event in five years, which will allow another assessment of PCB deposition on the cap surface.

## 5 SURFACE WATER SAMPLING

In 2018, in accordance with GE's June 6, 2017 letter titled Proposal to Discontinue Housatonic River Surface Water Monitoring Program and EPA's conditional approval of it (EPA 2017), GE continued the Housatonic River Quarterly Water Column Sampling Program at the Silver Lake outfall location (location shown on Figure 1-1), known as Location 4A. GE collected surface water samples at that location on January 25, April 25, July 25, and October 30, 2018 and submitted them to Eurofins Lancaster Laboratories Environmental for analysis of PCBs and total suspended solids (TSS). Field data such as temperature, conductivity, and pH were also collected during each event. In addition, for each event, the flow in the river was reported from data collected at the U.S. Geological Survey (USGS) river gage Station No. 01197000 on the East Branch of the Housatonic River in Coltsville, MA.

The results associated with the 2018 surface water monitoring at the Silver Lake outfall location are summarized in Table 5-1. As shown therein, PCBs from each event ranged from ND to 0.0090 parts per billion and TSS results ranged from 1.8 to 6.5 ppm.<sup>10</sup> The data in Table 5-1 have been validated in accordance with GE's 2013 Field Sampling Plan/Quality Assurance Project Plan (Arcadis 2013) and August 2017 Addendum (GE 2017), and an associated data validation report is provided in Appendix B of this Annual Monitoring Report.<sup>11</sup>

In addition, EPA collected and arranged for the analysis of split surface water samples collected during the quarterly surface water monitoring events. The analytical results for these split samples were provided by EPA and are summarized in Appendix C of this Annual Monitoring Report.

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<sup>10</sup> For the purpose of calculating a range, duplicate samples were averaged and half the reporting limit was used for ND samples (where appropriate).

<sup>11</sup> Note, for completeness, the validation report includes all samples collected as part of the quarterly water column sampling program, including those from the Silver Lake outfall (Location 4A) and those collected from the Pomeroy Avenue Bridge (Location 6A).

## 6 INSPECTIONS OF PROPERTIES SUBJECT TO GRANTS OF ERES OR TO CONDITIONAL SOLUTIONS

In accordance with the CD, EREs have been executed and recorded at a number of properties in the Silver Lake Area. At other properties, Conditional Solutions have been implemented in accordance with the provisions of the CD. The CD and Section 8.4 of the FCR require GE to conduct annual inspections of such properties that are not owned by GE or the Commonwealth of Massachusetts.

On April 25, 2016 GE submitted a *Proposal to Modify Post-Remediation Inspection Frequencies at Various Removal Action Areas* to EPA. This proposal was approved by EPA on April 26, 2016. Under this approved proposal, starting in 2016, Tetra Tech, Inc. (Tetra Tech), on GE's behalf, conducts the ERE and Conditional Solution inspections at the Silver Lake Area as part of a consolidated inspection program at numerous RAAs. The results of the 2018 ERE and Conditional Solution inspections at the Silver Lake Area were included in a January 2019 report titled *October 2018 Post-Remediation Inspections, Various Removal Action Areas* (Consolidated Report) (Tetra Tech 2019).

This section summarizes the ERE and Conditional Solution inspections conducted in 2018 for the applicable Silver Lake properties with reference to the Consolidated Report. Due to its length and coverage of numerous RAAs, a copy of the Consolidated Report is not included in Appendix A.

### 6.1 ERE Inspections

The non-GE-owned properties at the Silver Lake Area that are subject to EREs consist of:

1. Portions of two privately owned properties (Parcels I9-9-32 and I9-9-33) within this RAA, on which EREs were recorded on January 7, 2014;
2. The former GE property on the eastern bank of Silver Lake (Parcel I9-9-35), which was subsequently transferred to PEDAs, and on which an ERE was recorded on March 31, 2014; and
3. The PEDAs property on the northern bank of the lake (Parcels I9-10-9 and I9-9-36), on which an ERE was recorded on April 4, 2014.

For these properties/areas, annual inspections are required under Paragraph 57 and Appendix Q of the CD and the post-remediation ERE inspection requirements in Section 8.4.1 of the FCR to determine whether there is any visual evidence of non-compliance with the ERE restrictions or of certain other activities (e.g., certain types of excavation, construction, demolition, soil disturbance, erosion, etc.) at the Restricted Areas of these properties (as defined in the EREs) during the preceding year. These annual inspections include both a document review and a visual site inspection.

For each of the above-listed properties/areas, GE conducted the fifth annual ERE inspections in October 2018. As indicated in Section 2.17.2 of the Consolidated Report, these inspections revealed no new ERE-related documentation and no visual evidence of any activities or uses that are potentially contrary to the restrictions in the EREs or any of the other specified activities at the Restricted Areas of these properties since the prior ERE inspections in October 2017.

## 6.2 Conditional Solution Inspections

Conditional Solutions under the CD have been implemented at several non-residential properties within the Silver Lake Area – Parcels I9-9-201 and I9-9-17, Parcels I9-9-21 & -22, Parcel I9-9-25, and Parcel I9-9-34. On February 6, 2014, GE sent letters to the owners of these properties notifying them that a Conditional Solution had been implemented at the portions of their properties within the Silver Lake RAA. For these properties/areas, annual inspections are required under Paragraphs 36 and 38 and Appendix Q of the CD and the post-remediation Conditional Solution inspection requirements in Section 8.4.2 of the FCR (GE 2015) to determine whether there has been a change in ownership and to evaluate whether is visual evidence of any change in activities and uses that would be potentially inconsistent with the land use for which the Conditional Solution was implemented, or of certain other activities involving soil excavation or disturbance. These inspections include both a document review and a visual site inspection.

For the above-listed properties at which Conditional Solutions have been implemented at this RAA, GE conducted the fifth annual Conditional Solution inspections in October 2018. As indicated in Section 2.17.1 of the Consolidated Report, these inspections showed no changes in ownership of any of these properties and no visual evidence of any changes in activities or uses or other activities or conditions that require identification at the subject portions of these properties since the prior Conditional Solution inspections in October 2017.

## 7 FUTURE ACTIVITIES

GE will continue with post-remediation monitoring activities at the Silver Lake Area in accordance with applicable requirements presented in the PRSC and RPMM Plans in the FCR. A summary of the remaining post-remediation monitoring activities is provided in Table 7-1.<sup>12</sup> GE will coordinate scheduling of the monitoring visits with EPA and the Trustees, as appropriate. As indicated in Table 7-1, for some programs, at the end of the initial monitoring period, GE will propose to EPA for approval to either terminate or extend the performance of that program.

### 7.1 Shoreline Armor System and Shrub-Scrub Island Cap

In its September 28, 2018 letter report, GE proposed to terminate the shoreline armor system inspection program. However, in its December 18, 2018 conditional approval letter, EPA required GE to continue to perform inspections of the shoreline armor system and the integrity of the shrub-scrub island cap (previously included as part of the NRRE inspections) on an annual basis for the next three years, with the next inspection scheduled for summer 2019. Additionally, in accordance with EPA's December 18, 2018 conditional approval letter, inspections of the shrub-scrub island cap starting in 2019 will be performed as part of the PRSC program under EPA oversight and will no longer be considered an NRRE inspection item.

In addition to the scheduled inspections, the shoreline armor system and shrub-scrub island cap will be inspected after severe storms (as defined in the PRSC Plan included in the FCR), if any, and if an excessive wind event occurs, as determined in consultation with EPA. The annual inspections will continue for a total of three years (i.e., through 2021), at the end of which time GE will evaluate the program and make a proposal to EPA regarding the termination or modification of the program.

### 7.2 Backfilled/Restored Areas Adjacent to Silver Lake and Ancillary Items

The inspections of the backfilled/restored areas adjacent to Silver Lake and ancillary items (i.e., observations for the potential presence of NAPL and inspection of the catch-and-release signs) will continue to be conducted annually in the late summer/early fall, with the next such inspection in 2019. In addition, inspections of the backfilled/restored and other disturbed areas and the ancillary items will be conducted after severe storms (as defined in the PRSC Plan), if any.

### 7.3 Non-NRRE Plantings

As noted in Section 2, the summer 2018 inspection constituted the final monitoring event for the non-NRRE plantings, and no further action is required at this time. EPA approved the termination of monitoring the

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<sup>12</sup> As noted in the 2017 Annual Monitoring Report (Arcadis 2018), the final required inspections of the walking path and benches on the northern and eastern sides of the lake were completed with the 2016 inspection and the final required inspection of the sediment traps was completed in 2016. Thus, additional inspections of those items are not listed in Table 7-1 or discussed below.



non-NRRE plantings through its December 18, 2018 conditional approval letter. Thus, additional inspections of non-NRRE plantings are not listed in Table 7-1.

Based on the observations made during the summer 2018 inspection, GE's consultant administering the general invasive species control program (Haupt) will visit the site in spring 2019 to determine whether to continue the general invasive species control program for the non-NRRE planting areas in 2019 to address any trace invasive species and non-planted species. As stated in Table 2-1, GE will submit an informal e-mail or memo to EPA summarizing the findings of that informal re-evaluation. Additional invasive species control measures, if any, in the non-NRRE areas will be summarized in future reports as part of the discussion of the shoreline armor system inspection.

## 7.4 NRRE Plantings

Although no NRRE vegetation inspection is scheduled for 2019 under the RPMM Plan, GE plans to monitor the NRRE vegetation informally and qualitatively in 2019 during the scheduled non-NRRE inspection of the backfilled/restored areas (see Section 7.2). As indicated in Section 3.2.2, this qualitative monitoring will include continued evaluation of the status and health of the large trees on the eastern bank of Silver Lake and continued evaluation of the areas on the northern shore where minor beetle herbivory had been observed in 2017. Since this inspection will be qualitative and informal, no report will be submitted to the Trustees in 2019 on the status of the NRRE plantings. However, in the event that the need for follow-up action is identified, GE will so notify the Trustees by e-mail.

GE will also continue the general invasive species program in NRRE areas throughout 2019. In connection with this program, GE will continue to remove any additional water chestnut, bindweed, or other non-planted species that are observed to be hindering the development of planted vegetation. GE will also document activities related to the invasive species control program, if any, in monthly e-mails to the Trustees and EPA. At the end of the 2019 season, GE will evaluate the need for appropriate modifications to the invasive species control program and will propose any such modifications to the Trustees. However, as stated in the RPMM Plan included in the FCR, it is anticipated that this program will continue in the NRRE areas through the final year of the seven-year NRRE monitoring program (i.e., through 2020).

The qualitative and quantitative inspections required by the RPMM Plan will resume with one annual visit scheduled for the seventh year after construction, scheduled for the summer of 2020 (likely to be performed in July or August). As noted in Table 3-1, the summer 2020 NRRE monitoring event will include inspections of the one tree and 11 shrubs observed to be alive but stressed during 2018 inspections, as listed in Section 3.2.2.

In addition, the summer 2020 inspection will include continued qualitative observation of shrubs on the northern shore for potential beetle herbivory and implement controls if recommended by the arborist. This future NRRE inspection at the Silver Lake Area will be conducted in accordance with the RPMM Plan in the FCR, and a report will be submitted on the monitoring event to the Trustees and will include completed inspection checklists using the forms provided in the FCR, as appropriate.

## 7.5 Sediment Cap System

Although the 2018 cap monitoring event marked the fifth and final year of the post-construction cap monitoring program required by the PRSC Plan in the FCR, GE proposed in its December 14, 2018 cap

monitoring report to perform another cap monitoring event in five years – i.e., in summer 2023, which is 10 years after construction – to continue to assess the cap thickness, cap isolation layer, and PCB deposition on the cap surface. To mitigate the impact to cap integrity, GE proposed to collect cap cores during that event at only approximately half of the 21 locations investigated during construction and during the past five years after construction. Specifically, GE would collect cores from the ten locations at which PCB analysis has been performed during the first five years of monitoring. Core collection and processing will be performed using the general techniques and protocols used to date to monitor the cap thickness and integrity; and samples from the TOP, REM, and Mixing intervals will be processed in a similar manner to those collected in 2013, 2014, and 2018 and will be submitted for PCB analysis. GE proposed not to conduct a visual (underwater) inspection of the cap as part of that monitoring event, since the results of such visual inspections to date have not shown new or different information from that obtained through collection of the cores.

In its February 14, 2019 conditional approval letter, EPA approved that proposal, with the additional requirement to collect and process cap cores from three additional locations (namely, the three locations which had a total cap thickness less than 14 inches in 2018) to further assess cap thickness, but with no need to segment those cores and submit such segments for PCB analysis.

In the spring of 2023, GE will submit to EPA a specific proposal for the 10-year post-construction cap monitoring event proposed by GE, with the addition required by EPA.<sup>13</sup> Following that monitoring event, a report will be submitted to EPA, which will present the results and include a proposal regarding whether to terminate the cap monitoring program or to perform another a supplemental monitoring event.

## 7.6 Surface Water Sampling

In accordance with EPA's June 28, 2017 conditional approval letter (EPA 2017), surface water sampling associated with Silver Lake will continue to be performed quarterly at the Silver Lake outfall location (Location 4A) as part of PRSC activities for the Silver Lake Area. This sampling will continue until GE proposes and EPA approves additional modifications to this schedule.

## 7.7 Fish Sampling

In accordance with Section 8.2.3 of the PRSC Plan included in the FCR, GE will conduct a fish sampling event in Silver Lake 10 years after the completion of cap construction (i.e., in 2023). This sampling event will consist of collecting samples of representative fish from the lake and analyzing the fish tissue for PCBs and lipids. Prior to this sampling, GE will submit a fish tissue sampling plan to EPA, which will provide the details of the sampling and analysis activities, including the target number and species of fish to be collected. Following receipt of the validated results from this sampling, GE will submit a report describing and presenting the results of the sampling event. That report will also include a proposal regarding future fish tissue sampling events in Silver Lake for EPA's review and approval.

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<sup>13</sup> The proposal may be submitted concurrently with GE's plan for a fish sampling event in Silver Lake in 2023, as discussed in Section 7.7.

## 7.8 ERE and Conditional Solution Inspections

GE will continue to perform inspections of the non-residential, non-GE-owned properties with EREs and those at which Conditional Solutions have been implemented within the Silver Lake Area on an annual basis in the late fall, with the next inspections anticipated for October 2019. These inspections will be conducted as part of GE's consolidated inspection program for various RAAs; and the results will be reported in the consolidated multi-RAA inspection reports prepared by Tetra Tech.

## 7.9 Reporting

In accordance with the PRSC Plan and/or RPMM Plan included in the FCR, trip reports on the monitoring events described above will be submitted after completion of the inspection(s) in question.<sup>14</sup> Following each year of monitoring and maintenance activities, GE will submit an Annual Monitoring Report to EPA, with copies to the Trustees and MassDEP, on all of the PRSC and RPMM activities performed during the prior year. That report will include a summary of all of the inspection, monitoring, maintenance, and repair activities conducted at the Silver Lake Area during the subject year (as described in the preceding sections), including all validated analytical data generated by GE, as well as EPA's split-sampling data (if received). This report will be submitted by February 15 of the year following the performance of those activities, unless an alternate date is necessary to incorporate EPA's split surface water sampling results or is otherwise approved or requested by EPA.

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<sup>14</sup> As mentioned above, the reports on future ERE and Conditional Solution inspections will be included in the consolidated reports on October inspections, to be prepared by Tetra Tech and submitted in January of the following year.

## 8 REFERENCES

- Arcadis. 2013. Field Sampling Plan/Quality Assurance Project Plan – Revision 5. Prepared for General Electric Company, Pittsfield, MA. July (submitted on July 2, 2013).
- Arcadis. 2015. Final Completion Report for the Silver Lake Area Removal Action. Prepared for General Electric Company, Pittsfield, MA. May (submitted on May 20, 2015).
- Arcadis. 2018. 2017 Annual Monitoring Report for Silver Lake Area. Prepared for General Electric Company, Pittsfield, MA. March (submitted on March 23, 2018).
- EPA (U.S. Environmental Protection Agency). 2017. Conditional Approval of Proposal to Discontinue Housatonic River Surface Water Monitoring Program. June 28.
- GE (General Electric Company). 2017. Addendum to the Field Sampling Plan/Quality Assurance Project Plan; Surface Water Typical Reporting Limits, Method Detection Limits, and Practical Quantitation Limits and Sediment/Soil Analytical Methods. August 23.
- Tetra Tech. 2019. October 2018 Post-Remediation Inspections, Various Removal Action Areas. Prepared for General Electric Company, Pittsfield, MA. January (cover letter dated January 21, 2019).

# TABLES



Table 2-1  
2018 Non-NRRE Areas/Items Requiring Response and Follow-Up Actions

2018 Annual Monitoring Report  
Silver Lake Area  
General Electric Company - Pittsfield, Massachusetts

No.	Area/Item Identified	Description	Completed Follow-up Action	Future Follow-up Action
1.	Area 1 - Armor Stone Displacement and Exposure of Fabric at SL-OF-09	Indication of armor stone displacement and exposure of geotextile fabric on the bank above SL-OF-09.	Anchored fabric and placed additional armor stone in this area in November 2018.	Evaluate repairs in 2019.
2.	General - Non-NRRE Plantings - Invasive Species and Non-Planted Species	Trace invasive species observed.	Continued the general invasive species control program, including removal of non-planted species hindering the development of planted vegetation, with treatments as shown in Table 2-2.	In spring 2019, re-evaluate the need for continuing the invasive species control program in 2019. (GE will submit an informal email or memo to EPA summarizing the findings of the informal re-evaluation.)

**Table 2-2**  
**Summary of 2018 Invasive Species Treatments**

**2018 Annual Monitoring Report**  
**Silver Lake Area**  
**General Electric Company – Pittsfield, Massachusetts**

Treatment Number	Date of Treatment	Treatment <sup>1</sup> / Species Controlled
1	May 29	Treated (including hand pulling) observed invasive plant species around Silver Lake, including coltsfoot, cypress spurge, Japanese knotweed, mugwort, Russian olive, phragmites, spotted knapweed, and yellow iris.
2	June 11	Treated (including hand pulling) observed invasive plant species around Silver Lake, including cypress spurge, Japanese knotweed, mugwort, oriental bittersweet, phragmites, Russian olive, spotted knapweed, and yellow iris.
3	June 29	Treated (including hand pulling) observed invasive plant species around Silver Lake, including coltsfoot, cypress spurge, mugwort, phragmites, purple loosestrife, spotted knapweed, and yellow iris.
4	July 16	Treated (including hand pulling) observed invasive plant species around Silver Lake, including coltsfoot, mugwort, purple loosestrife, Russian olive, spotted knapweed, and yellow iris.
5	August 2	Treated (including hand pulling) observed invasive plant species around Silver Lake, including coltsfoot, cypress spurge, grapevine, mugwort, oriental bittersweet, purple loosestrife, phragmites, Russian olive, spotted knapweed, tatarian honeysuckle, and yellow iris. Additionally, water chestnut plants observed in Silver Lake.
6	August 16	Treated (including hand pulling) observed invasive plant species around Silver Lake, including Canada thistle, coltsfoot, cypress spurge, mugwort, phragmites, purple loosestrife, Russian olive, spotted knapweed, and yellow iris.
7	August 28	Treated (including hand pulling) observed invasive plant species around Silver Lake, including grapevine, Japanese knotweed, mugwort, phragmites, purple loosestrife, Russian olive, spotted knapweed, and yellow iris.
8	September 11	Treated (including hand pulling) observed invasive plant species around Silver Lake, including the black locust, buckthorn, coltsfoot, mugwort, oriental bittersweet, phragmites, purple loosestrife, and Russian olive. Additionally, water chestnuts removed from Silver Lake.
9	October 24	Performed post hard frost treatment of invasive species. Treated observed invasive plant species around Silver Lake, including the coltsfoot, mugwort, oriental bittersweet, Russian olive, spotted knapweed, and yellow iris.

Notes:

1. All treatments performed with Rodeo.



**Table 3-1**  
**2018 NRRE Areas/Items Requiring Response and Follow-Up Actions**

**2018 Annual Monitoring Report**  
**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

No.	Area/Item Identified	Description	Follow-up Action Completed since Inspection	Future Follow-up Action
1.	Area 1 - Large Red Oak and Maple Trees along Eastern Bank of Silver Lake in the I9-9-35 Monitoring Area	All large trees appeared to be in good health during the summer 2018 inspection. The arborist again recommended that the large red oak and maple trees would benefit from continued fertilization in 2019.	Not applicable	Continue fertilization activities in 2019, as necessary.
2.	General - Stressed Tree and Shrubs in Various Monitoring Plots	During the summer 2018 inspection, 11 shrubs and 1 tree within the monitoring plots were observed to be stressed.	Not applicable	Quantitatively re-evaluate health of vegetation in monitoring plots during the summer 2020 NRRE monitoring event.
3.	General - Herbivory on Certain Shrubs in 2017	Re-evaluated the status of minor herbivory due to beetles on shrubs along the northern shoreline that was observed during the spring 2017 inspection. No herbivory observed.	Not applicable	Continue to observe for potential beetle herbivory and implement controls, if necessary.
4.	General - Invasive Species and Non-Planted Species	During the summer 2018 inspection invasive species control was observed to generally be effective, and only minimal presence of non-planted species (e.g., Virginia creeper, raspberry, bindweed) was observed.	Continued the general invasive species control program, including removal of non-planted species hindering the development of planted vegetation and removal of water chestnuts from the lake on September 11, with treatments as shown in Table 2-2.	Continue the invasive species control program in 2019 and likely 2020.

Table 5-1  
Surface Water Monitoring Results Summary

2018 Annual Monitoring Report  
Silver Lake Area  
General Electric Company - Pittsfield, Massachusetts

Sample ID	Sample Location	Date Collected	Parameter														
			Analytical Parameters									Field Measurements					Flow (cfs) <sup>1</sup>
			Aroclor-1016 (ppb)	Aroclor-1221 (ppb)	Aroclor-1232 (ppb)	Aroclor-1242 (ppb)	Aroclor-1248 (ppb)	Aroclor-1254 (ppb)	Aroclor-1260 (ppb)	Total PCBs (ppb)	Total Suspended Solids (ppm)	Conductivity (mS/cm)	pH (Standard Units)	Sample Depth (m)	Turbidity (ntu)	Water Temperature (°C)	
LOCATION-4A	Outfall to the Housatonic River	01/25/18	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	ND(0.0098) [ND(0.0097)]	5.07 [7.91]	0.670	7.04	0.18	14	3.3	244
		04/25/18	ND(0.0095) J [ND(0.0094) J]	ND(0.0095) J [ND(0.0094) J]	ND(0.0095) J [ND(0.0094) J]	ND(0.0095) [ND(0.0094)]	ND(0.0095) [ND(0.0094)]	0.0091 J [0.0089 J]	ND(0.0095) [ND(0.0094)]	0.0091 J [0.0089 J]	2.84 J [2.39 J]	1.197	7.78	0.14	3	10.0	242
		07/25/18	ND(0.0092) [ND(0.0092)]	ND(0.0092) [ND(0.0092)]	ND(0.0092) [ND(0.0092)]	ND(0.0092) [ND(0.0092)]	ND(0.0092) [ND(0.0092)]	ND(0.0092) [ND(0.0092)]	0.0081 J [0.008 J]	0.0081 J [0.008 J]	ND(3.00) [2.00 J]	0.887	8.38	0.15	3	25.7	108
		10/30/18	ND(0.0095) [ND(0.0095)]	ND(0.0095) [ND(0.0095)]	ND(0.0095) [ND(0.0095)]	ND(0.0095) [ND(0.0095)]	ND(0.0095) [ND(0.0095)]	ND(0.0095) [ND(0.0095)]	0.0067 J [ND(0.0095)]	0.0067 J [ND(0.0095)]	4.63 [4.33]	0.862	7.42	0.15	5	8.1	NA

- Notes:
- 1. Flow indicated in cubic feet per second (cfs) as recorded upstream at the U.S. Geological Survey (USGS) River Gage Station No. 01197000 on the East Branch of the Housatonic River in Coltsville, MA.
  - 2. Sampling method involved the collection of a grab sample at the location, representative of 50 percent of the total river width at 50 percent of the total river depth.
  - 3. Samples were collected by Arcadis.
  - 4. Duplicate samples are presented in brackets.

Acronyms and Qualifiers:

- ND - Analyte was not detected. The number in parentheses is the associated reporting limit.
- J - Indicates an estimated value.
- NA - Analyte was not analyzed / Parameter was not recorded.

**Table 7-1**  
**Summary of Future Long-Term Monitoring Activities**

**2018 Annual Monitoring Report**  
**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

Monitoring Activity	Frequency <sup>1</sup>	Duration <sup>1</sup>	Year to be Performed <sup>1</sup>					Reporting Requirement	Comments on Future Monitoring Activities
			2019 (Year 6)	2020 (Year 7)	2021 (Year 8)	2022 (Year 9)	2023 (Year 10)		
Armoring System and Shrub-Scrub Island Cap	Annually, and following flow event greater than 3,500 cfs <sup>2</sup> and/or an excessive wind event, in consultation with EPA	PRSC Plan program completed, perform additional 3 years post-PRSC Plan + Proposal	X	X	X			One report required after each monitoring event, to be submitted within 30 days after the event.	Performed annually, likely in summer. Visual observation for signs of significant erosion of the shoreline (e.g., slope failure, ruts, gullies, washouts, or sloughing), and signs of significant erosion.
Invasive Species Control in Non-NRRE Areas	As needed	PRSC Plan program completed, re-evaluate spring 2019	X						Based on spring 2019 re-evaluation, may be performed in spring through fall on a periodic basis (depending on rainfall and seasonal growth patterns) to inspect re-vegetated areas for invasive species and apply treatment as necessary. Includes removal of non-planted species (e.g., bindweed, Virginia creeper, raspberry) if they are observed to be hindering development of planted vegetation.
Catch and Release Signs	Annually and following severe storms (with peak flow > 3,500 cfs <sup>2</sup> )	Indefinite	X	X	X	X	X		Performed annually in August or September. Visual observations of the "catch and release" signs that have been posted along the northern and eastern banks of Silver Lake. Specifically, GE will evaluate whether those signs remain in place and whether any of them are damaged or fallen down, requiring repair.
Backfilled/Restored Areas Adjacent to Silver Lake			X	X	X	X	X		Performed annually in August or September. Visual observation for evidence of erosion, effectiveness of erosion controls in areas where vegetation not established, evidence of depressions and/or surface water ponding, areas where excessive settlement has occurred relative to the surrounding areas, drainage or growth problems, and other conditions that could jeopardize the performance of the completed remediation actions.
NAPL Observations			X	X	X	X	X		Performed annually in August or September. Visual observations of the banks of Silver Lake, as well as the lake surface, to determine whether there are any apparent bank seeps of NAPL or NAPL sheens and thus to assess whether the Performance Standards established in the CD for NAPL, as set forth in Section 4.2 of Attachment H to the SOW, are being met in this RAA.
NRRE Plantings	One visit in seventh years after planting	7 years post-construction		X				One report after the monitoring event, to be submitted within 90 days after the event.	Qualitative and quantitative inspections to be performed in the summer of 2020 for plant survivability, vegetative ground cover, invasive species presence/cover, and any indication of damage from trespassing or herbivory.
Invasive Species Control in NRRE Areas	As needed	Anticipated 7 years post-construction (with potential proposal for modification after 2019)	X	X				Relevant information to be included in trip report on NRRE Plantings (see above).	Performed in spring through fall on a periodic basis (depending on rainfall and seasonal growth patterns) in accordance with Invasive Species Control Plan included in revised summer 2015 NRRE inspection report. Includes removal of non-planted species (e.g., bindweed, Virginia creeper, raspberry) if they are observed to be hindering development of planted vegetation. Includes removal of water chestnut, if observed.
Cap Thickness and Integrity	Once in tenth year after installation	PRSC Plan program completed, perform additional 5-year post-PRSC Plan event + Proposal					X	Trip report to be submitted within 30 days after each monitoring event or after receipt of validated analytical results (if applicable).	Collection of cap material cores for assessment of cap thickness and integrity. Prior to this sampling, GE will submit a sampling plan to EPA, which will provide the details of the sampling and analysis activities, including the target number of cores to be collected.
Cap Isolation Layer and Deposition on Cap							X		Analytical sampling of the cap with sample cores sectioned into three depth intervals for analysis for PCBs. Prior to this sampling, GE will submit a sampling plan to EPA, which will provide the details of the sampling and analysis activities, including the target number of cores to be collected.
Surface Water Sampling	Quarterly	See Note 3	See Note 3					See Note 3	See Note 3
Fish Sampling	Year 10	Year 10 post-construction + Proposal					X	Summary report to be submitted within 30 days after receipt of validated analytical results.	Sampling of representative fish from the lake and analysis of the fish tissue for PCBs and lipids. Prior to this sampling, GE will submit a fish tissue sampling plan to EPA, which will provide the details of the sampling and analysis activities, including the target number and species of fish to be collected.
ERE Inspections and Conditional Solution Inspections	Annually	Indefinite	X	X	X	X	X	Summary report to be included in consolidated inspection report for various RAAs, submitted in January of following year.	Performed in October at non-GE-owned parcels with EREs or Conditional Solutions.

Notes:

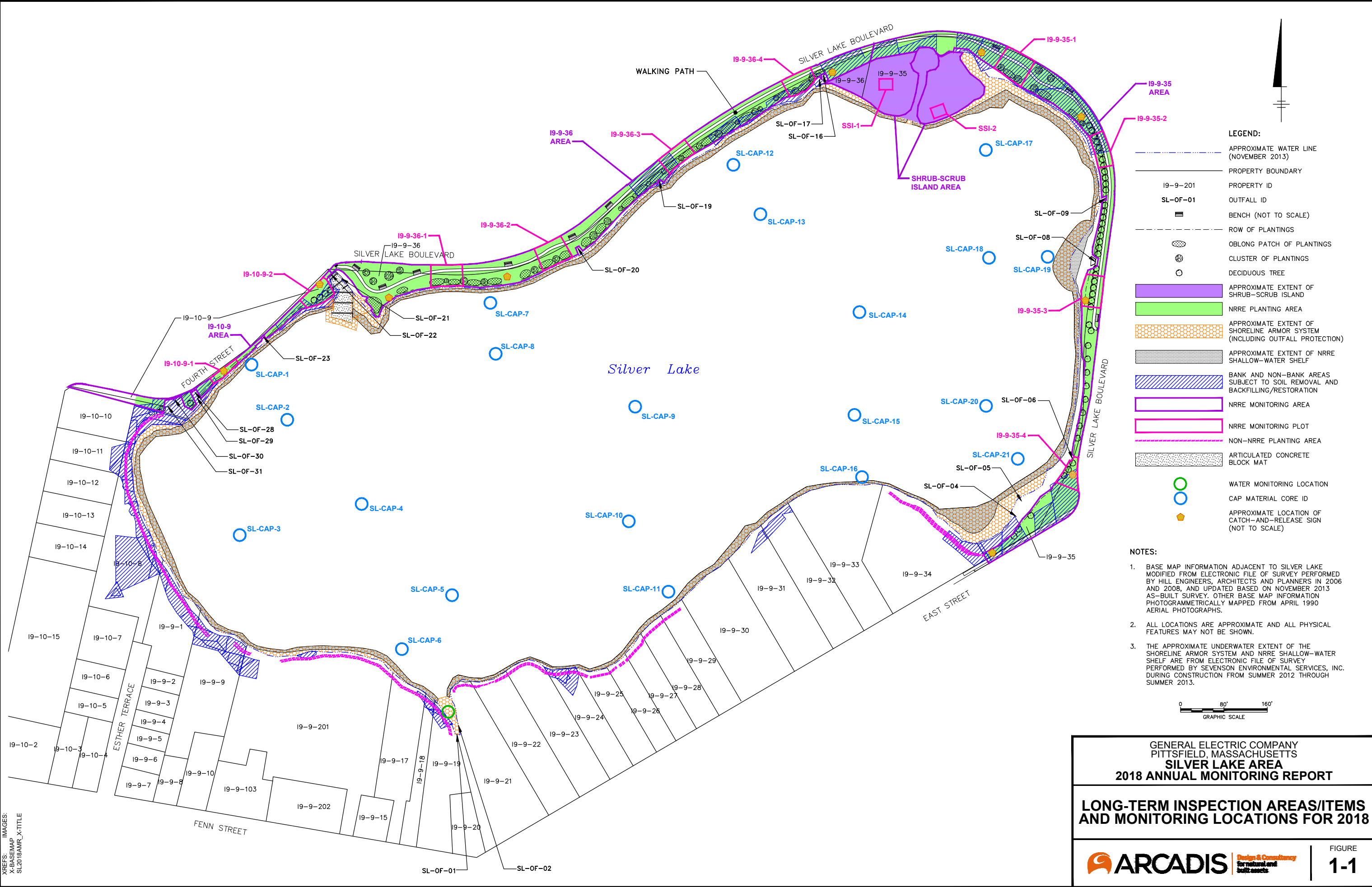
1. Frequency, Duration, and Year to be Performed are relative to year after completion of remediation and restoration activities (i.e., 2013).
2. As measured at the United States Geological Survey (USGS) River Gage Station No. 01197000 on the East Branch of the Housatonic River in Coltsville, MA.
3. Pursuant to EPA's June 28, 2017 conditional approval letter, GE will continue with its ongoing quarterly water sampling at the Silver Lake outfall and report the results in the Annual Report.
4. GE will notify EPA of all scheduled monitoring, inspections and maintenance activities, except for surface water sampling, 14 days in advance to allow for arrangements of oversight.
5. For those monitoring programs for which "Proposal" is noted as part of the duration, GE will evaluate and propose to EPA an appropriate further monitoring program at the end of the initial monitoring period.
6. For additional details on any program summarized above, refer to the Final Completion Report for the Silver Lake Area Removal Action, which was submitted to the U.S. Environmental Protection Agency on May 20, 2015 and approved by EPA on June 22, 2015.

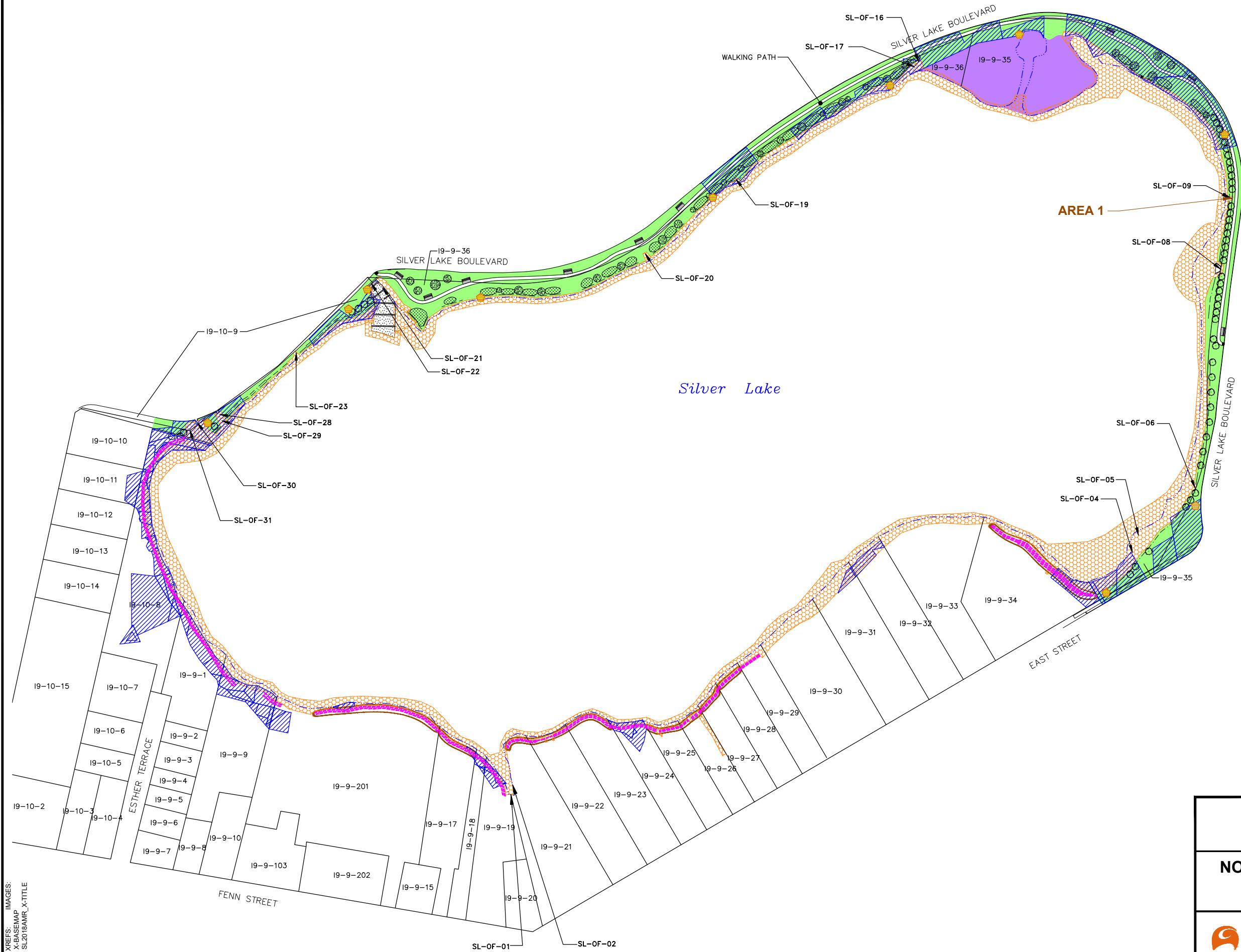
Acronyms:

cfs - cubic feet per second  
EPA - United States Environmental Protection Agency  
ERE - environmental restriction and easement  
GE - General Electric Company  
NAPL - non-aqueous-phase liquid  
NRRE - natural resource restoration/enhancement  
PCB - polychlorinated biphenyl  
PRSC - Post Removal Site Control  
RAA - Removal Action Area

# FIGURES

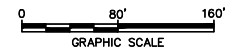






- LEGEND:**
- APPROXIMATE WATER LINE (NOVEMBER 2013)
  - PROPERTY BOUNDARY
  - PROPERTY ID
  - BENCH (NOT TO SCALE)
  - ROW OF PLANTINGS
  - OBLONG PATCH OF PLANTINGS
  - CLUSTER OF PLANTINGS
  - DECIDUOUS TREE
  - OUTFALL ID
  - APPROXIMATE LOCATION OF CATCH-AND-RELEASE SIGN (NOT TO SCALE)
  - APPROXIMATE EXTENT OF SHRUB-SCRUB ISLAND
  - APPROXIMATE EXTENT OF SHORELINE ARMOR SYSTEM (INCLUDING OUTFALL PROTECTION)
  - ARTICULATED CONCRETE BLOCK MAT
  - BANK AND NON-BANK AREAS SUBJECT TO SOIL REMOVAL AND BACKFILLING/RESTORATION
  - NRRE PLANTING AREA
  - NON-NRRE PLANTING AREA

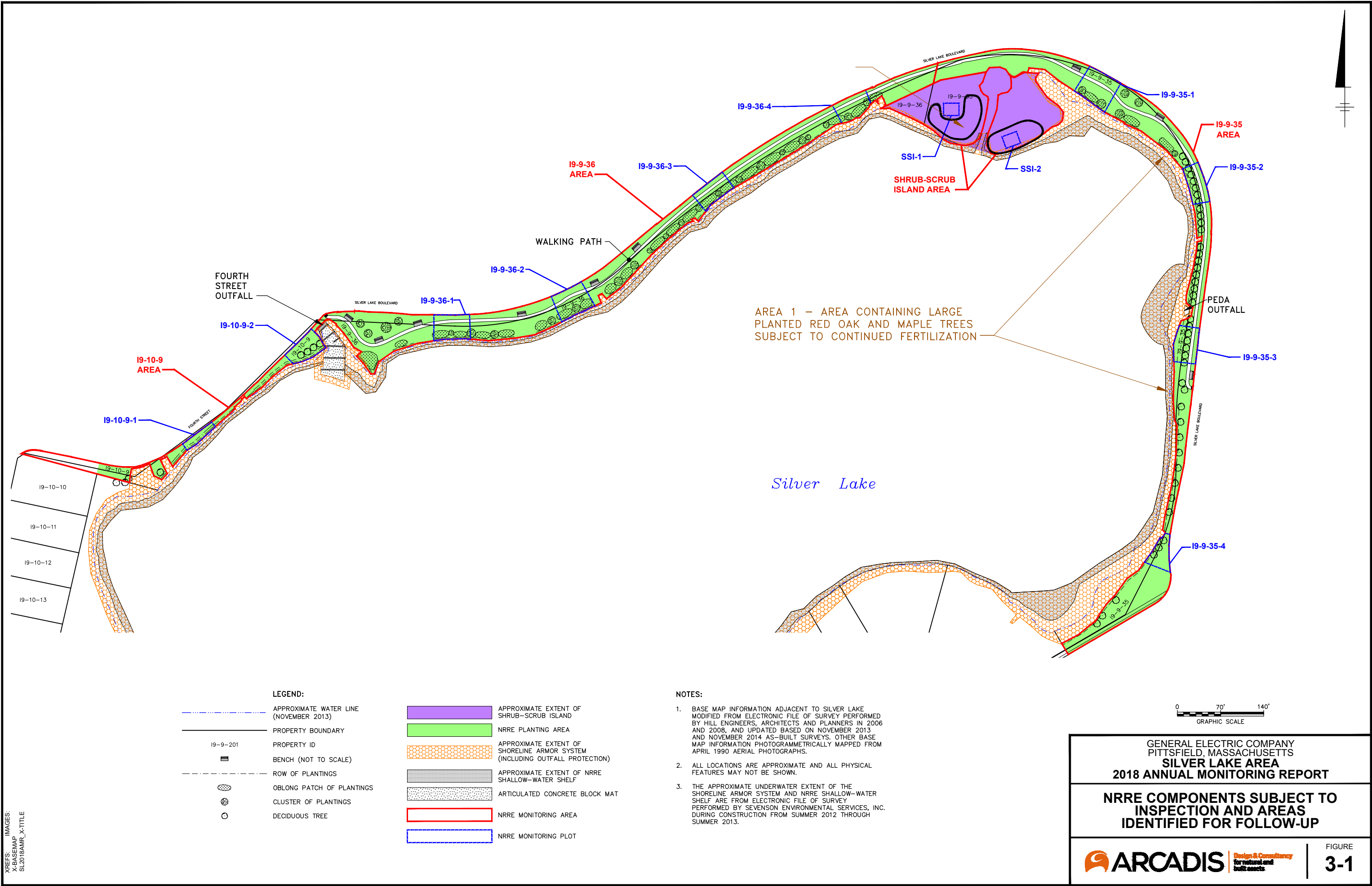
- NOTES:**
- BASE MAP INFORMATION ADJACENT TO SILVER LAKE MODIFIED FROM ELECTRONIC FILE OF SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS AND PLANNERS IN 2006 AND 2008, AND UPDATED BASED ON NOVEMBER 2013 AND NOVEMBER 2014 AS-BUILT SURVEYS. OTHER BASE MAP INFORMATION PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
  - ALL LOCATIONS ARE APPROXIMATE AND ALL PHYSICAL FEATURES MAY NOT BE SHOWN.
  - THE APPROXIMATE UNDERWATER EXTENT OF THE SHORELINE ARMOR SYSTEM IS FROM ELECTRONIC FILE OF SURVEY PERFORMED BY SEVENSON ENVIRONMENTAL SERVICES, INC. DURING CONSTRUCTION FROM SUMMER 2012 THROUGH SUMMER 2013.
  - THE AREAS INSPECTED INCLUDED THE FOLLOWING AREAS SHOWN ON THIS FIGURE: SHORELINE ARMOR SYSTEM, OUTFALLS, CATCH AND RELEASE SIGNS, LARGE WOODY DEBRIS, AND NON-NRRE PLANTING AREAS. IN ADDITION, ALTHOUGH NOT SHOWN, NON-NRRE VEGETATION PLANTED IN OTHER AREAS THAT WERE DISTURBED AND RESTORED DURING THE PERFORMANCE OF THE REMEDIATION (E.G., STAGING/ACCESS AREAS) WERE ALSO INSPECTED.

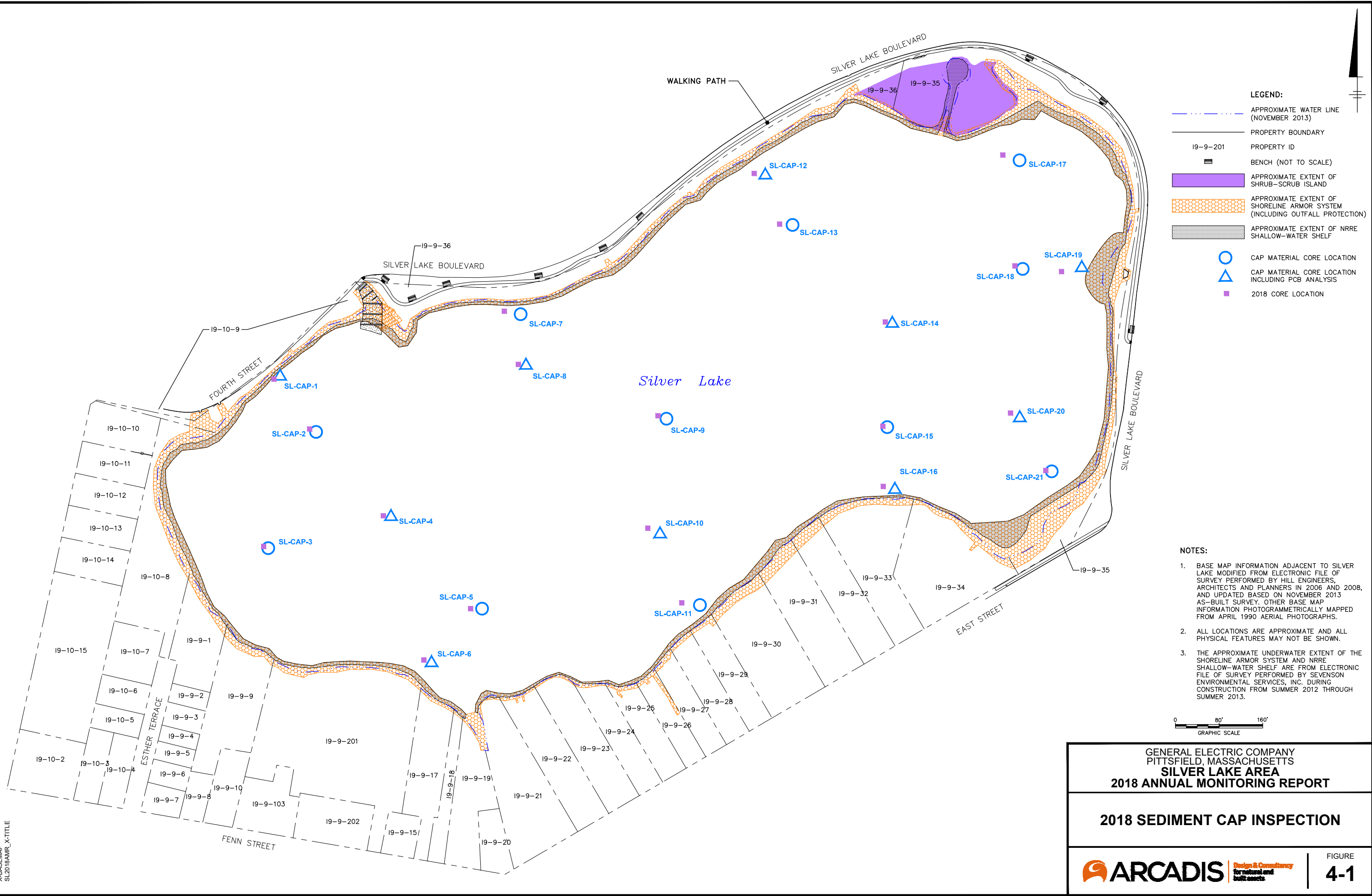


GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS  
**SILVER LAKE AREA**  
**2018 ANNUAL MONITORING REPORT**

**NON-NRRE COMPONENTS SUBJECT  
TO INSPECTION AND AREAS  
IDENTIFIED FOR FOLLOW-UP**









# APPENDIX A

Previously Submitted Reports and Letters from 2018  
Inspection/Monitoring Activities



## **Appendix A**

### **Previously Submitted Reports and Letters from 2018 Inspection/Monitoring Activities**

#### **Silver Lake Area**

#### **General Electric Company – Pittsfield Massachusetts**

#### **Table of Contents**

- June 18, 2018 – Spring 2018 Inspection of Shoreline Armor System, Catch-and-Release Signs, and Non-Natural Resource Restoration / Enhancement Plantings (conditionally approved by EPA on July 9, 2018)
- June 18, 2018 – Report on Spring 2018 Inspection of Natural Resource Restoration/Enhancement Measures (conditionally approved by the Trustees on September 17, 2018)
- September 28, 2018 – Summer 2018 Inspection of Shoreline Armor System, Backfilled/Restored Areas, Potential NAPL Presence, and Non-Natural Resource Restoration / Enhancement Plantings (conditionally approved by EPA on December 18, 2018)
- October 26, 2018 – Summer 2018 Inspection of Natural Resource Restoration / Enhancement Measures (conditionally approved by the Trustees on February 21, 2019)
- December 14, 2018 – Report on 2018 Monitoring of Cap Thickness and Integrity, Cap Isolation Layer, and Deposition on Cap Surface (conditionally approved by EPA on February 14, 2019)

#### **Included by Reference Only:**

- January 21, 2019 – October/November 2018 Post-Remediation Inspections, Various Removal Action Areas. Prepared by Tetra Tech, Inc. on behalf of GE

June 18, 2018 – Spring 2018  
Inspection of Shoreline Armor  
System, Catch-and-Release  
Signs, and Non-Natural Resource  
Restoration / Enhancement  
Plantings



June 18, 2018

Mr. Christopher Smith  
U.S. Environmental Protection Agency, Region I  
Office of Site Remediation and Restoration  
5 Post Office Square - Suite 100  
Boston, MA 02109-3912

**Re: GE-Pittsfield/Housatonic River Site  
Silver Lake Area (GECD600)  
Spring 2018 Inspection of Shoreline Armor System, Catch-and-Release Signs, and Non-Natural Resource Restoration/Enhancement Plantings**

Dear Mr. Smith:

On May 15, 2018, the General Electric Company (GE) performed a post-remediation inspection at the Silver Lake Area Removal Action Area (RAA). That inspection was performed in accordance with the applicable requirements of the Post-Removal Site Control (PRSC) Plan included in GE's Final Completion Report (FCR) for the Silver Lake Area Removal Action, which was submitted to the U.S. Environmental Protection Agency (EPA) on May 20, 2015 and approved by EPA on June 22, 2015. In accordance with those requirements, the May 15, 2018 inspection focused on the following aspects of the remediation and restoration activities conducted at this RAA: (1) the shoreline armor system, including outfalls to Silver Lake; (2) the catch-and-release signs advisory signs on the banks;<sup>1</sup> and (3) certain restored plantings other than those installed as part of natural resource restoration/enhancement (NRRE) measures.<sup>2</sup> The locations of these remediation components are shown on Figure 1 (along with other aspects of the remediation and restoration that are subject to separate inspections).

Prior to the May 2018 inspection, GE's most recent prior post-remediation inspection of the above-listed remediation components was performed in September 2017, with a trip report on it submitted to EPA on October 6, 2017. EPA provided conditional approval of that report on October 23, 2017. A summary of all 2017 monitoring activities was included in GE's 2017 Annual Monitoring Report, which was submitted on March 23, 2018 and conditionally approved by EPA on April 25, 2018.

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<sup>1</sup> As recommended by EPA in a September 3, 2015 conditional approval letter, the annual inspection of the catch-and-release signs on the banks has been shifted from the late summer/early fall inspection to the spring inspection.

<sup>2</sup> The NRRE shrub-scrub island cap was also inspected on May 15, 2018 as part of NRRE monitoring activities, and a report on those monitoring activities will be submitted separately to the natural resource trustees, with a copy to EPA. Other components of the remediation, including the sediment cap, NRRE plantings, and the backfilled/restored and other disturbed areas adjacent to the Lake, are subject to annual inspections in late summer or early fall, with the 2018 inspections to be conducted later this year.

## **Pre-Inspection Activities**

The repair, maintenance, and replanting activities identified during the summer non-NRRE 2017 inspection summarized in GE's 2017 Annual Monitoring Report were completed prior to the spring 2018 monitoring event. Specifically, the following activities were performed:

- For large woody debris (LWD) which was reasonably accessible from shore, rebar was removed from the LWD in October 2017. If rebar was removed from the LWD, a spike and cable or nylon rope were used to anchor the LWD in place. If rebar could not be fully removed from the LWD and lake bottom, safety caps were installed on the end of the exposed rebar (Area 1 in Table 1 and on Figure 1).
- Three new catch-and-release signs were installed in October 2017 on behalf of the City of Pittsfield.

In addition, just after the spring 2018 monitoring event, GE's consultants conducted a site visit on May 29, 2018 to continue the general invasive species control program. The report associated with this treatment was provided to EPA via email on June 6, 2018, and is included as Attachment A.

## **Summary of Inspection and Results**

The May 15, 2018 inspection constituted the first of the 2018 semi-annual inspections of the shoreline armor system and the non-NRRE plantings subject to continued monitoring in accordance with the PRSC Plan in the FCR. It also constituted the required annual inspection of the catch-and-release signs. The monitoring activities were performed by Michael Long and Gregg Rabasco of Arcadis (on GE's behalf). The monitoring event was also attended by Christopher Smith of EPA and Izabela Zapisek of Avatar Environmental, Inc. (on EPA's behalf). Robin McEwan of Stantec and Thomas Potter of the Massachusetts Department of Environmental Protection (on behalf of the natural resource trustees) were also present to participate in the NRRE inspection performed the same day (to be addressed in a separate report); however, they did not participate in the non-NRRE inspection addressed in this report. An arborist from the Haupt Tree Company, Inc. (Haupt) was also present on May 15, 2018 to support the vegetation inspections. The inspection activities and results are summarized below, along with any proposed follow-up actions. The items requiring response and the proposed follow-up actions are summarized in Table 1.

### ***Shoreline Armor System Inspection***

In accordance with the PRSC Plan in the FCR, the spring 2018 inspection of the shoreline armor system consisted of visual observations of that system to assess the effects, if any, of shoreline wave and/or wind action on the sediment cap/armor system along the shoreline and to identify any other conditions that could jeopardize the performance of that system. These included observations to identify any evidence of significant erosion of the shoreline (e.g., slope failure, ruts, gullies, washouts, or sloughing), any evidence of exposed geotextile in the in-water or on-shore portions of the armor system, and any other apparent deficiencies in the system. Further, as required by the PRSC Plan in the FCR, this inspection included an inspection of the outfalls that were protected and/or maintained during remediation activities (as listed and shown in Drawing 1 of Appendix F of the FCR) to identify any evidence of erosion, damage, or other conditions that could impair discharges from these outfalls.



On the day of the inspection (May 15, 2018), the mean flow in the Housatonic River was approximately 74.6 cubic feet per second (cfs), as measured at the U.S. Geological Survey (USGS) river gage in Coltsville. Since completion of the last inspection of these areas on September 6, 2017, multiple high-flow event (i.e., estimated flow greater than 440 cfs at the Coltsville gage) were observed:

- October 30, 2017 (daily mean of 518 cfs)
- January 12 through 14, 2018 (max daily mean of 1,310 cfs)
- February 12, 2018 (daily mean of 444 cfs)
- February 21 and 22, 2018 (max daily mean of 490 cfs)
- April 17, 2018 (daily mean of 687 cfs)

The results of the spring 2018 inspection of the shoreline armor system are presented in inspection checklist B-1 provided in Attachment B. As indicated on that checklist, no areas within the armor system along the shoreline were observed with significant erosion (as defined above). During the inspection of the outfalls that were protected and/or maintained during remediation activities, no significant erosion was observed, and no conditions were observed that could impair discharges from the outfalls.

As noted above and in the 2017 Annual Monitoring Report, GE performed maintenance activities to address the rebar exposed from the LWD. During the spring 2018 monitoring event, some additional exposed rebar was observed at eight locations (Area 1A in Table 1 and on Figure 1), either due to a missing safety cap or to new exposure, and GE is currently discussing with EPA the most appropriate method for addressing the additional exposed rebar. Potential methods include those outlined below:

- For LWD that is reasonably accessible from the shore and anchored in place with rebar, GE will attempt to fully remove the rebar from the LWD and lake bottom. For those LWD for which rebar is successfully removed, GE will drive a stake in to the adjacent shoreline, and anchor the LWD to shore with a cable or nylon rope.
- If the rebar cannot be fully removed from the LWD and lake bottom, GE will either cut the rebar flush with the LWD or install safety caps on the end of the exposed rebar to minimize the risk of injury. GE will procure safety caps (if any are necessary) that can be installed securely and tightly on the rebar so there is minimal chance of the caps coming loose.

Following the above-summarized maintenance activity to address the rebar exposed from the LWD, GE does not anticipate further routine maintenance to the LWD. However, if exposed rebar is noted in future inspections GE will address the exposed rebar as outlined above, or if LWD accumulates at the outlet from Silver Lake to the Housatonic River, GE will discuss with EPA the need to remove such LWD from the outlet.

### ***Monitoring of Catch-and-Release Signs***

During the spring 2018 inspection, visual observations were made of the catch-and-release signs that were posted by the City of Pittsfield along the northern and eastern banks of Silver Lake to evaluate whether those signs remained in place and whether any of them were damaged or fallen down, requiring repair. The results of the spring 2017 inspection of the signs are also included in the Inspection Checklist attached

as Attachment B. As indicated on that checklist, all ten catch-and-release signs were observed to be present and in good condition (Photograph 1, Attachment C).

### ***Non-NRRE Vegetation Monitoring***

As noted in the 2015 Annual Monitoring Report, the summer 2015 inspection of the non-NRRE plantings and other vegetation was the last inspection required under the general two-year monitoring program specified for non-NRRE vegetation in the PRSC Plan in the FCR. However, based on replanting required since the completion of construction in 2013, semi-annual inspections of specific plantings was required in 2018. The spring 2018 non-NRRE vegetation monitoring included observations of the following plantings:

- Two Fraser fir trees replanted on Parcel I9-9-28 in the spring of 2016 (Area 8 in Table 1 and on Figure 1).

The spring 2018 inspection included observations and counts of the two trees noted above to assess the number, survival, and condition of those plantings. Table 2 summarizes the results of the observations/counts of the monitored shrubs and trees. As shown in that table, the two Fraser firs planted on Parcel I9-9-28 on May 31, 2016 were observed to be alive and healthy (Photograph 2, Attachment C). As the monitoring duration for the replanted trees was reset to two years after planting, these trees will be monitored again during the summer 2018 event (Area 8 on Figure 1 and in Table 1).

In addition to the observations of the plantings, although not specifically required, the spring 2018 inspection included observations of the presence and extent of invasive plant species in the non-NRRE planting areas visited. During the spring 2018 inspection, trace invasive species were observed, and based on the observations made during the monitoring event, GE will continue the general invasive species control program for the remaining non-NRRE planting area through summer 2018 to address these trace invasive species and non-planted species.

### ***Summary***

The items identified during the spring 2018 inspection or those remaining from 2017 inspections as requiring response actions and the completed and proposed follow-up actions are summarized in Table 1. As previously mentioned, some of those actions have already been implemented – namely continuation of the general invasive species control program. The remaining identified follow-up actions include addressing the additional exposed rebar, re-evaluations of various areas or plantings during the summer 2018 Non-NRRE inspection, and continuation of the general invasive species control program for the rest of 2018.

### ***Future Activities***

In accordance with the PRSC Plan in the FCR, GE will implement the maintenance activities identified above and summarized in Table 1 (and not yet completed) within 90 days of the inspection date (i.e., by August 13, 2018) – assuming timely EPA approval – unless otherwise agreed to or specified by EPA.

As provided in the PRSC Plan, the next scheduled inspection of the shoreline armor system and the replanted non-NRRE plantings will be conducted in summer 2018, along with the next annual inspection of



the backfilled/restored and other disturbed areas and specific observations for the potential presence of non-aqueous-phase liquid.<sup>3</sup> All such future inspections will be conducted in accordance with the PRSC Plan in the FCR. Reports will be submitted on all of these and other monitoring events performed in the Silver Lake Area, and will include completed inspection checklists (if applicable).

Please contact me if you have any questions regarding the information presented in this letter.

Sincerely,

Handwritten signature of Lauren Putnam in cursive script, followed by a forward slash and the word "for".

Kevin G. Mooney  
Senior Project Manager  
Attachments

cc: Dean Tagliaferro, EPA\*  
Tim Conway, EPA (cover letter only)\*  
Chris Ferry, ASRC Primus\*  
Scott Campbell, Avatar\* (plus 2 hard copies)  
Robert Leitch, USACE\*  
Michael Gorski, MDEP\*  
John Ziegler, MDEP\*  
Eva Tor, MDEP\* (cover letter only)  
Thomas Potter, MDEP\*  
Nancy E. Harper, MA AG\* (cover letter only)  
Nate Joyner, Pittsfield Dept. of Community Development\*  
James McGrath, Pittsfield Dept. of Parks and Recreation\*  
Corydon Thurston, Executive Director, PEDAs\*  
Barbara Landau, Noble, Wickersham & Heart\*  
James Gagnon, O'Reilly, Talbot & Okun\*  
Rod McLaren, GE\* (cover letter only)  
Andrew Silber, GE\*  
James Bieke, Sidley Austin LLP  
Mark Graveling, Todd Cridge, and Lauren Putnam, Arcadis\*  
GE Internal Repositories

*\* electronic copy only*

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<sup>3</sup> As noted above, the required annual inspections of the sediment cap thickness and integrity will be performed separately in the fall (through at least 2018). As also indicated above, the NRRE plantings and other NRRE measures installed at the Silver Lake Area (including the shrub-scrub island cap) are subject to separate inspections in accordance with the Restoration Project Monitoring and Maintenance Plan in the FCR.



## TABLES

**Table 1**  
**Spring 2018 Non-NRRE Areas/Items Requiring Response and Follow-Up Actions**

**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

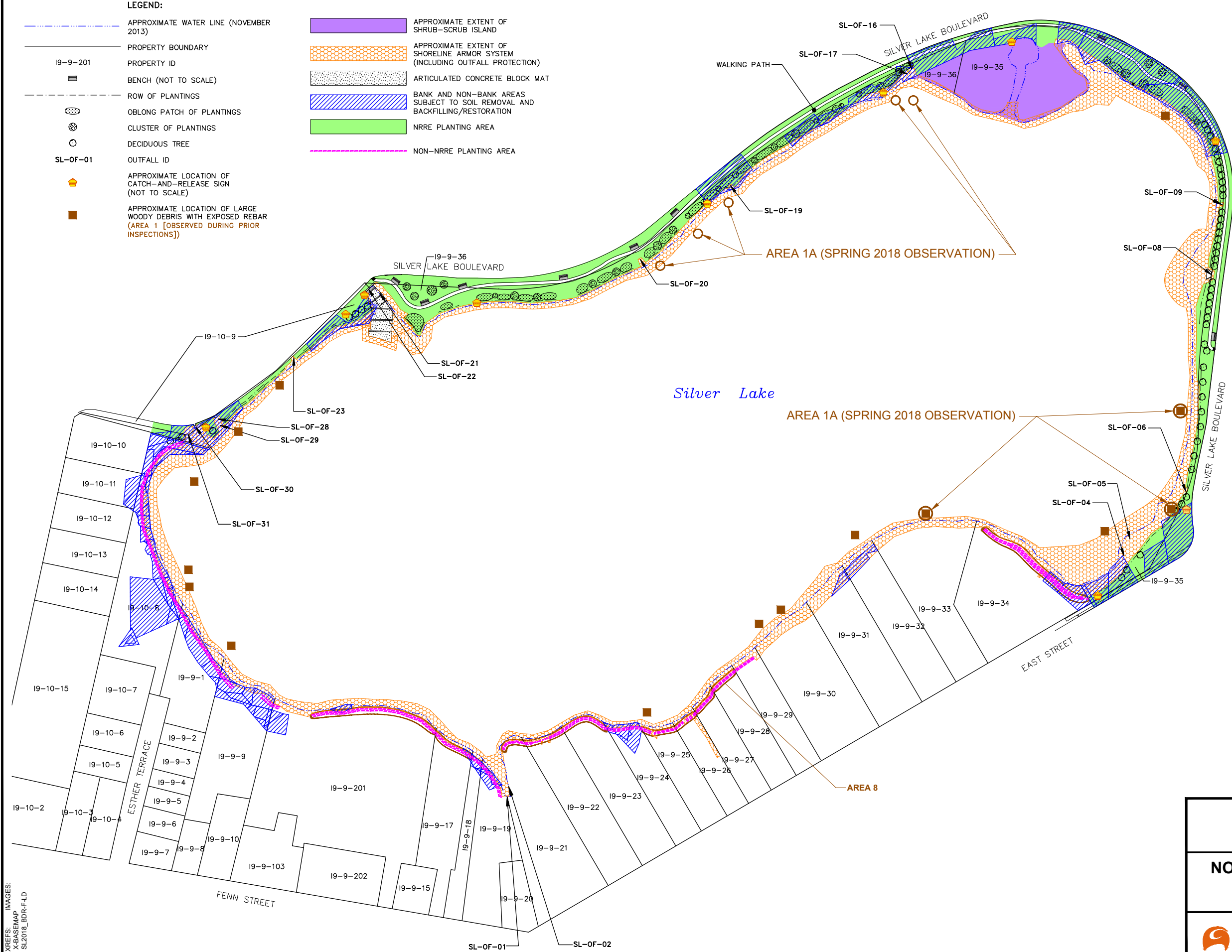
No.	Area/Item Identified	Description	Completed Follow-up Action	Future Follow-up Action
1.	Area 1/1A - Exposed Rebar	Rebar used to install large woody debris (LWD) was observed in spring 2016 to be exposed above the top of the large woody debris. Evaluated large woody debris during the spring 2017 monitoring event.	In October 2017, for LWD which was reasonably accessible from shore, removed the rebar from LWD. If rebar was removed from the LWD, used a spike and cable or nylon rope to anchor the LWD in place. If rebar could not be fully removed from the LWD and lake bottom, installed safety caps on the end of the exposed rebar.	Based on outcome from ongoing discussions with EPA, for areas where the safety cap was missing and/or new rebar was exposed, perform maintenance (Area 1A).
2.	Area 8 - Non-NRRE Plantings on Parcel I9-9-28	Planted two Fraser fir trees (on May 31, after completion of the spring 2016 inspection) and re-evaluated health during spring 2017 inspection.	Fraser fir trees were observed to be in good health during the summer 2017 inspection.	Monitor the two re-planted Fraser fir trees on this parcel during the summer 2018 monitoring event.
3.	General - Non-NRRE Plantings - Invasive Species and Non-Planted Species	Trace invasive species observed.	Continued the general invasive species control program, including removal of non-planted species hindering the development of planted vegetation, with treatments as shown in Appendix A.	Continue the general invasive species control program in spring 2018, including removal of any additional bindweed or other non-planted species that are observed to be hindering development of planted vegetation. During the next inspection, re-evaluate the need for continuing the invasive species control program.

**Table 2**  
**Summary of Spring 2018 Restored Vegetation Inspection in the Non-NRRE Areas**

**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

Species	Quantity to be Monitored	Quantity Observed Not Stressed or Dead	Quantity Observed Stressed	Quantity Observed Dead
<b>19-9-28</b>				
Fraser Fir	2	2	0	0

FIGURE

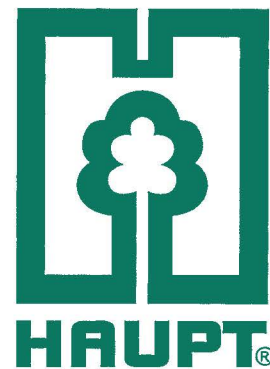


**NON-NRRE COMPONENTS SUBJECT IDENTIFIED FOR FOLLOW-UP**

**ARCADIS** Design & Consultancy for natural and built assets

# ATTACHMENT A

The Haupt Tree Company, Inc.  
Arborists  
Box 156  
Sheffield, MA 01257  
(413) 229-8565  
1-800-874-8733  
A Multiple Service  
Arboricultural Firm  
haupttree.com



5/15/18      ARCADIS SILVER LAKE FIRST SITE MEETING

Initial walk through inspection complete. Invasive weeds are suppressed from past inspections. Invasive weeds identified on 5/15/18 were marked on map. Control of invasive weeds may begin at any time in the immediate future. New growth is present on all invasive weeds.

Control of viburnum leaf beetle may begin next week. New growth is present on viburnum, so insect activity is predicted to begin next week.

SEE ADJACENT MAP

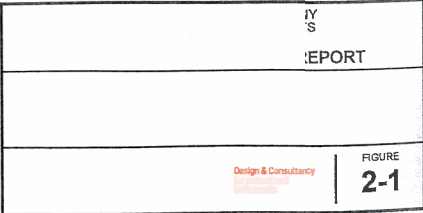


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CITY SYRACUSE, NY DIVISGROUP EBCIMDV DB K SARTORI, L ROSENAUER PIC P KEANEY PM T BRIDGE TM L PUTNAM LYK ORIONN\* OF F REF\*  
C USXCMJSDJBM 366 DOWDGE CORP ENW PRODIGE SILVER LAKE 2017 PLANNING ASSB9TQ2IBULL41D32 402GSL 2017 MAR\_ FIG 2-1, NON-INSTR INSPECTION DWG LAYOUT 2-1, SAVED 1/26/2016 11:10 PM CADJWER 2015 (LMS TECH) PAGESETUP





The Haupt Tree Company, Inc.  
Arborists  
Box 156  
Sheffield, MA 01257  
(413) 229-8565  
1-800-874-8733  
A Multiple Service  
Arboricultural Firm  
haupttree.com



## 5/29/18 ARCADIS SILVER LAKE INVASIVE WEED CONTROL

### 1<sup>ST</sup> APPLICATION WRITEUP

Some small accumulations of mugwort and spotted knapweed seedlings were located along sidewalk on east side of lake. Yellow iris seedlings found around entire perimeter of lake. Russian olive seedling treated along roadside on NW corner of lake.

Evidence of control of all species present

[VIEW MAP AND PHOTOS](#)

\*\*\*\*VIBURNUM LEAF BEETLE LARVA PRESENT ON VIBURNUMS ON THIS DATE!!!



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Sucker Growth on Red Maples.



Spotted Knapweed



Mugwort seedling



Spotted knapweed



Yellow Iris



Japanese Knapweed

Cypress Spurge



Colt's Foot,



Herbicide being dripped on phragmites



Phragmites



Active Viburnum Leaf Beetle larva activity.





Japanese Knotweed Patch near I9-9-36



Yellow Iris



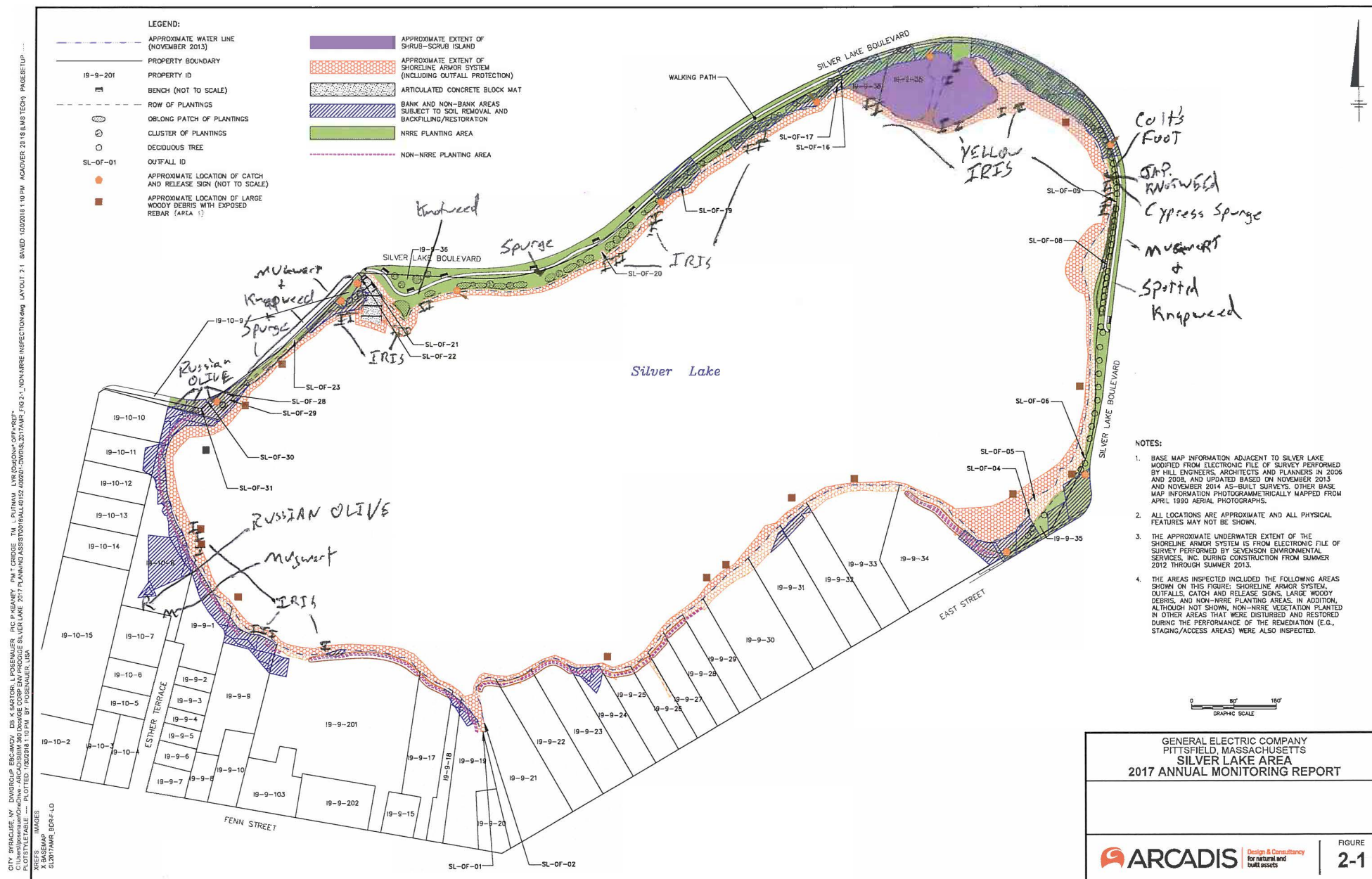


Yellow Iris Removed





5/29/18 1<sup>st</sup> Application



## ATTACHMENT B

**ATTACHMENT B-1**  
**CHECKLIST FOR VISUAL INSPECTION OF SHORELINE ARMORING**  
**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

**I. GENERAL INFORMATION**

Inspection Date: 15-May-18  
 Conducted By/Phone Number: Mike Long, Gregg Rabasco  
 Weather Conditions: Mostly cloudy, 70 °F

**II. INSPECTION SUMMARY**

1. **Preliminary Inspection Activities** *(Confirm that Figure 8-1 of the Final Completion Report for Silver Lake Area Removal Action and the as-built drawings of the shoreline armor system provided in Appendix F of that document have been reviewed in the field during the inspection. )*  
 - Figure 8-1 of the Final Completion Report and the as-built drawings of the shoreline armor system provided in Appendix F of that document were reviewed in the field.
2. **Shoreline Armoring** *(Note any physical changes since last inspection; note evidence of significant erosion of the shoreline [e.g., slope failure, ruts, gullies, washouts, or sloughing], and if any erosion is observed, evaluate whether there are any eroded soils remaining in the lake; note any evidence of visible geotextile beneath the in-water or on-shore portions of the armor system; note other conditions that could jeopardize the performance of the completed remediation actions. )*  
 - No significant erosion was observed in the armor system along the shoreline.
3. **Protected/Maintained Outfalls** *(Inspect the outfalls that were protected and/or maintained during remediation activities, as listed and shown on Drawing 1 of Appendix F to the Final Completion Report; note any evidence of erosion or damage or other condition that could impair discharges from these outfalls. )*  
 - No significant erosion was observed, and no conditions were observed that could impair discharges from the outfalls.
4. **Catch and Release Signs** *(Note any missing signs, and note any damage to or displacement of the existing ten signs. )*  
 - All ten signs were found in place and in good condition.  
 - Note when signs were replaced in 2015 the installed locations were shifted from those illustrated on Figure 8-1 of the Final Completion Report. The current locations are illustrated on Figure 1 of this letter report.
5. **Other Observations** *(Confirm that repair/maintenance activities identified during prior inspection, if any, have been performed; note any other general observations, including parcel-specific restoration activities. )*  
 - Rebar used to install large woody debris (LWD) was observed to be exposed above the top of the LWD in some locations. Some locations were part of previous maintenance activities and the safety caps had been knocked off, others were newly exposed rebar (Area 1/1A in Table 1 and on Figure 1).

**III. FOLLOW-UP MAINTENANCE AND REPAIR ACTIVITIES**

- Based on input from EPA, for LWD reasonably accessible from shore with exposed rebar (Area 1/1A on Figure 1), attempt to remove rebar and instead use cable/nylon tie-downs to anchor the LWD. If rebar cannot be removed, rebar will be cut or safety caps will be installed on the remaining rebar.

## ATTACHMENT C

**Attachment C  
Photographic Log**

**Silver Lake Area  
General Electric Company – Pittsfield, Massachusetts**

---

**Photograph 1: Catch-and-release sign on west side of Silver Lake.**



**Photograph 2: Fraser firs trees looking alive and healthy on Parcel I9-9-28.**



June 18, 2018 - Report on  
Spring 2018 Inspection of  
Natural Resource Restoration /  
Enhancement Measures





June 18, 2018

Mr. Thomas Potter  
Lead Administrative Trustee  
MassDEP Bureau of Waste Site Cleanup  
One Winter Street, 8<sup>th</sup> Floor  
Boston, Massachusetts 02108

**Re: GE-Pittsfield/Housatonic River Site  
Silver Lake Area (GECD600)  
Report on Spring 2018 Inspection of Natural Resource Restoration/Enhancement Measures**

Dear Mr. Potter:

On May 15, 2018, the General Electric Company (GE) performed the spring 2018 inspection of the natural resource restoration/enhancement (NRRE) measures at the Silver Lake Area Removal Action Area (RAA). That inspection was performed in accordance with the applicable requirements of the Restoration Project Monitoring and Maintenance (RPMM) Plan included in GE's Final Completion Report (FCR) for the Silver Lake Area Removal Action, which was submitted to the U.S. Environmental Protection Agency (EPA) on May 20, 2015 and approved by EPA on June 22, 2015. In accordance with those requirements, the spring 2018 inspection focused on the following restoration activity conducted at this RAA: the cap placed over the shrub-scrub island.<sup>1</sup> The location of this remediation component is shown on Figure 1 (along with other aspects of the remediation and restoration that are subject to separate inspections).

Prior to the May 2018 inspection, GE's most recent prior inspection of the NRRE measures at this RAA was performed in September 2017, with a final trip report on it submitted to the natural resource trustees (Trustees), through the Lead Administrative Trustee on February 28, 2018. The Trustees provided conditional approval of that report on April 24, 2018. A summary of all 2017 monitoring activities was included in GE's 2017 Annual Monitoring Report, which was submitted on March 23, 2018 and conditionally approved by EPA on April 25, 2018.

### **Pre-Inspection Activities**

The following maintenance activities identified during the summer 2017 NRRE inspection (as described in GE's 2017 Annual Monitoring Report) were completed prior to the spring 2018 inspection:

- On May 3, 2018, just prior to the spring 2018 monitoring event, the tree maintenance program was continued for the large red oak and maple trees along the eastern bank of Silver Lake in the Parcel I9-9-35 monitoring area (Area 5 on Figure 1).

Additionally, just after the spring 2018 monitoring event, GE's consultants conducted a site visit on May 29, 2018 to continue the general invasive species control program. The report associated with this treatment was provided to the Trustees via email on June 6, 2018, and is included as Attachment A.

---

<sup>1</sup> The inspections of non-NRRE components of the remediation at the Silver Lake Area was also performed on May 15, 2018, and a report on those monitoring activities will be submitted separately to EPA, with a copy to the natural resource trustees. Other components of the remediation, including the plantings installed as part of NRRE measures, the sediment cap, and the backfilled/restored and other disturbed areas adjacent to the Lake, are subject to annual inspections in late summer or early fall, with the 2018 inspections to be conducted later this year.



## Summary of Inspection and Results

The May 15, 2017 NRRE inspection constituted the first of the 2018 semi-annual inspections of the shrub-scrub island cap, in accordance with the RPMM Plan in the FCR. The monitoring activities were performed by Michael Long and Gregg Rabasco of Arcadis (on GE's behalf). The monitoring event was also attended by Christopher Smith of EPA and Izabela Zapisek of Avatar Environmental, Inc. (on EPA's behalf) and Robin McEwan of Stantec and Thomas Potter of the Massachusetts Department of Environmental Protection (on behalf of the Trustees). An arborist from the Haupt Tree Company, Inc. (Haupt) was also present on May 15, 2018, and the report provided by the arborist from the inspection is provided in Attachment A.

### *Shrub-Scrub Island Cap Inspection*

In accordance with the RPMM Plan in the FCR, the summer inspection of the shrub-scrub island cap was performed in conjunction with the non-NRRE inspection of the shoreline armor system. The inspection of the shrub-scrub island cap consisted of visual observations to identify any areas where the cap may be eroding (e.g., in areas along the edge of water that do not have armor stone) or experiencing any other conditions that could jeopardize the performance of the cap.<sup>2</sup>

The results of the summer inspection of the shrub-scrub island cap are presented in the inspection checklist in Attachment B. As indicated in that checklist, there were no areas within the scrub-shrub island cap observed to have significant erosion or other conditions that could jeopardize the performance of the cap.

## Summary of Follow-up Actions

The items identified during the spring 2018 NRRE inspection or those remaining from 2017 inspections as requiring response actions and the proposed follow-up actions are summarized in Table 1.<sup>3</sup> As previously mentioned, some of those actions have already been implemented – namely: (1) the performance of maintenance activities for the large red oak and maple trees along the eastern bank of Silver Lake in the I9-9-35 monitoring area; and (2) continuation of the general invasive species control program in this RAA. The remaining identified follow-up actions include re-evaluations of various areas or plantings during the summer 2018 NRRE inspection, herbivory control, and continuation of the general invasive species control program for the rest of 2018.<sup>4</sup>

## Future NRRE Inspections

The next required NRRE vegetation monitoring event under the RPMM Plan is scheduled for summer 2018 (likely in August or September in conjunction with other required monitoring activities). In addition, in accordance with the RPMM Plan, the second semi-annual 2018 inspection of the shrub-scrub island cap will likewise be performed in the summer of 2018. These and all future NRRE inspections at the Silver Lake Area will be conducted in accordance with the RPMM Plan in the FCR.<sup>5</sup> Reports will be submitted on these monitoring events to the Trustees and will include completed inspection checklists using the forms provided in the FCR, as appropriate.

---

<sup>2</sup> On the days of the inspection (May 15, 2018), the mean flow in the Housatonic River was approximately 74.6 cubic feet per second (cfs), as measured at the U.S. Geological Survey (USGS) river gage in Coltsville. Following completion of the prior inspection of these areas on September 6, 2017, several high-flow events (i.e., estimated flow greater than 440 cfs at the Coltsville gage) were observed. Namely, on October 30, 2017 (518 cfs), and in 2018, January 12 through 14 (range of 502 to 1,310 cfs), February 12 (444 cfs) and 21 through 22 (range of 458 to 490 cfs), and April 17 (687 cfs).

<sup>3</sup> The RPMM Plan in the FCR provides that GE will implement any corrective actions identified during an NRRE inspection within 90 days of the inspection date or 30 days of the Trustees' approval of the proposal (whichever is later), unless otherwise agreed to by the Trustees. In this case, however, given the ongoing nature of the some of the maintenance (e.g., general invasive species control program), some of the identified follow-up activities were conducted prior to that time, as described in the text.

<sup>4</sup> At the end of 2018, GE will evaluate the need for appropriate modifications to the invasive species control program and will propose any such modifications to the Trustees. However, as stated in the RPMM Plan, it is anticipated that this program will continue in the NRRE areas through the final year of the seven-year NRRE monitoring program (i.e., through 2020).

<sup>5</sup> The inspections of the non-NRRE components of the remediation at the Silver Lake Area will be performed separately in accordance with the Post-Removal Site Control Plan in the FCR, with separate reports submitted to EPA.

Please contact me if you have any questions regarding the information presented in this letter.

Sincerely,

A handwritten signature in cursive script that reads "Lauren Putnam". To the right of the signature, the word "for" is written in a similar cursive style.

Kevin G. Mooney  
Senior Project Manager

Attachments

cc: Dean Tagliaferro, EPA\*  
Christopher Smith, EPA\*  
Tim Conway, EPA (without attachments)\*  
Chris Ferry, ASRC Primus\*  
Scott Campbell, Avatar\* (plus 2 hard copies)  
Izabella Zapisek, Avatar\*  
Robert Leitch, USACE\*  
Michael Gorski, MDEP\*  
John Ziegler, MDEP\*  
Eva Tor, MDEP (without attachments)\*  
Nancy E. Harper, MA AG (without attachments)\*  
Robin McEwan, Stantec\*  
Susan Peterson, CT DEEP\*  
Nate Joyner, Pittsfield Dept. of Community Development\*  
James McGrath, Pittsfield Dept. of Parks and Recreation\*  
Corydon Thurston, Executive Director, PEDAs\*  
Barbara Landau, Noble, Wickersham & Heart\*  
James Gagnon, O'Reilly, Talbot & Okun\*  
Andrew Silber, GE\*  
Rod McLaren, GE (without attachments)\*  
Mark Gravelding, Todd Cridge, and Lauren Putnam, Arcadis\*  
James Bieke, Sidley Austin LLP  
GE Internal Repositories

*\* electronic copy only*

TABLE

**Table 1**  
**Spring 2018 NRRE Areas/Items Requiring Response and Follow-Up Actions**

**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

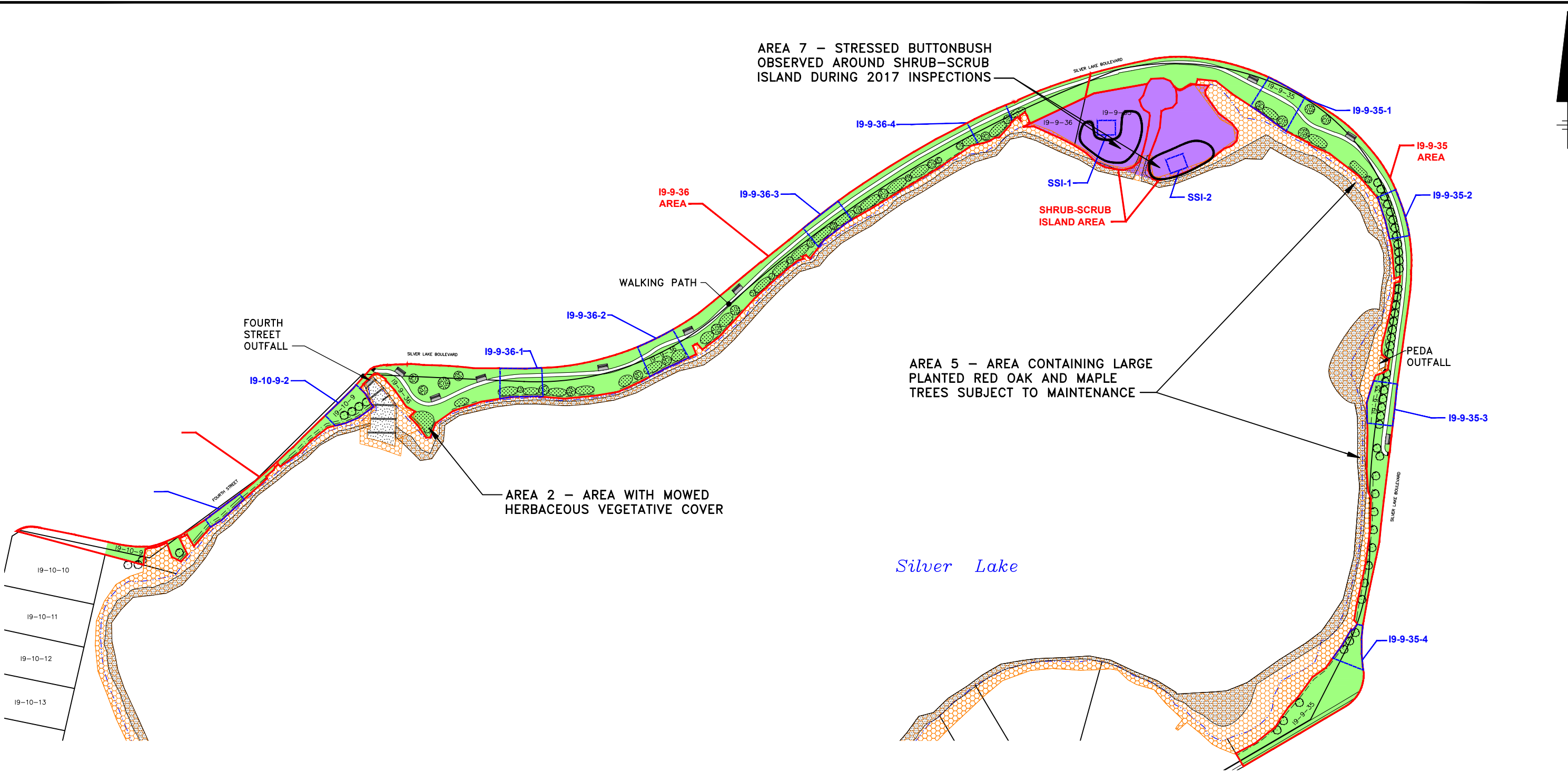
No.	Area/Item Identified	Description	Completed Follow-up Action	Future Follow-up Action
1.	Area 2 - Mowed Herbaceous Vegetative Cover	An area on the eastern shore of the Fourth Street Outfall on Parcel I9-9-36 was reseeded in May 2017 and was qualitatively re-evaluated during the summer 2017 inspection. <sup>1</sup> The area was observed during the summer 2017 inspection to have dense herbaceous vegetative cover. However, in their February 22, 2018 comment letter, the Trustees noted that the reseeded Area 2 was observed to have been recently mowed.	None	In their February 22, 2018 comment letter, the Trustees requested that GE install signage (or something similar) to deter future mowing at Area 2. In their April 24, 2018 conditional approval letter, the Trustees noted their intent to follow-up with both the City of Pittsfield and GE separately to address this issue.
2.	Area 5 - Large Red Oak and Maple Trees along Eastern Bank of Silver Lake in the I9-9-35 Monitoring Area	The arborist again recommended that the large red oak and maple trees would benefit from continued maintenance with mulch, bed maintenance, and fertilization.	Continued maintenance activities, including work on May 3, 2018.	Continue maintenance/fertilization activities in 2018, as necessary, and during the summer 2018 NRRE planting inspection re-evaluate health.
3.	Area 7 - Stressed Vegetation Around Shrub-Scrub Island	Although vegetation on the shrub-scrub island was observed during the summer 2017 inspection to be in generally good condition, the majority of the buttonbush planted on the shrub-scrub island were observed to be stressed or dead, while the red-osier dogwoods were observed to be thriving. Herbaceous cover on the shrub-scrub island shows no signs of stress.	None	During the summer 2018 NRRE planting inspection, re-evaluate the vegetation on the shrub-scrub island to evaluate growth of native volunteers and overall percent cover of vegetation on the shrub-scrub island.
4.	General - Stressed Tree and Shrubs in Various Monitoring Plots	During the summer 2017 inspection, 10 shrubs (buttonbushes) in the SSI-2 monitoring plot were observed to be stressed.	None	During the summer 2018 NRRE planting inspection, re-evaluate the survival and condition of the 10 stressed shrubs (buttonbushes) in Monitoring Plot SSI-2.
5.	General - Herbivory on Certain Shrubs	Re-evaluated the status of minor herbivory due to beetles on shrubs along the northern shoreline that was observed during the spring 2017 inspection. Indication of viburnum leaf beetle larva was observed.	Continued monitoring activities (during May 29, 2018 invasive species control activities).	Implement herbivory controls. During the summer 2018 NRRE planting inspection, continue to observe for potential beetle herbivory and implement controls as recommended by the arborist.
6.	General - Invasive Species and Non-Planted Species	During the spring 2018 inspection invasive species control was observed to generally be effective, and only minimal presence of non-planted species (e.g., Virginia creeper, raspberry, bindweed) was observed.	Continued the general invasive species control program, including removal of non-planted species hindering the development of planted vegetation, with treatments as shown in Attachment A.	Continue the general invasive species control program in 2018, including removal of any additional bindweed or other non-planted species that are observed to be hindering development of planted vegetation. During the summer 2018 NRRE plantings inspection, re-evaluate the need for continuing the invasive species control program.

Note:

1. Re-seeding and mulching was not required or performed in a strip down the center of Area 2 where a path has been worn for access to the lake.

FIGURE



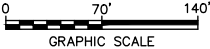


LEGEND:

	APPROXIMATE WATER LINE (NOVEMBER 2013)		APPROXIMATE EXTENT OF SHRUB-SCRUB ISLAND
	PROPERTY BOUNDARY		NRRE PLANTING AREA
	PROPERTY ID		APPROXIMATE EXTENT OF SHORELINE ARMOR SYSTEM (INCLUDING OUTFALL PROTECTION)
	BENCH (NOT TO SCALE)		APPROXIMATE EXTENT OF NRRE SHALLOW-WATER SHELF
	ROW OF PLANTINGS		ARTICULATED CONCRETE BLOCK MAT
	OBLONG PATCH OF PLANTINGS		NRRE MONITORING AREA
	CLUSTER OF PLANTINGS		NRRE MONITORING PLOT
	DECIDUOUS TREE		

NOTES:

1. BASE MAP INFORMATION ADJACENT TO SILVER LAKE MODIFIED FROM ELECTRONIC FILE OF SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS AND PLANNERS IN 2006 AND 2008, AND UPDATED BASED ON NOVEMBER 2013 AND NOVEMBER 2014 AS-BUILT SURVEYS. OTHER BASE MAP INFORMATION PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
2. ALL LOCATIONS ARE APPROXIMATE AND ALL PHYSICAL FEATURES MAY NOT BE SHOWN.
3. THE APPROXIMATE UNDERWATER EXTENT OF THE SHORELINE ARMOR SYSTEM AND NRRE SHALLOW-WATER SHELF ARE FROM ELECTRONIC FILE OF SURVEY PERFORMED BY SEVENSON ENVIRONMENTAL SERVICES, INC. DURING CONSTRUCTION FROM SUMMER 2012 THROUGH SUMMER 2013.



GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS  
SILVER LAKE AREA

NRRE COMPONENTS SUBJECT TO  
INSPECTION AND AREAS  
IDENTIFIED FOR FOLLOW-UP

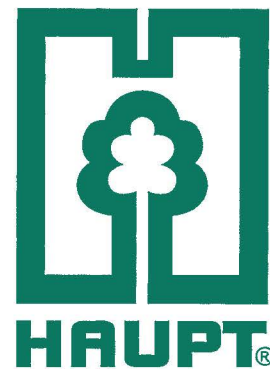
**ARCADIS** Design & Consultancy  
for natural and  
built assets

FIGURE  
**1**

# ATTACHMENT A



The Haupt Tree Company, Inc.  
Arborists  
Box 156  
Sheffield, MA 01257  
(413) 229-8565  
1-800-874-8733  
A Multiple Service  
Arboricultural Firm  
haupttree.com



5/15/18      ARCADIS SILVER LAKE FIRST SITE MEETING

Initial walk through inspection complete. Invasive weeds are suppressed from past inspections. Invasive weeds identified on 5/15/18 were marked on map. Control of invasive weeds may begin at any time in the immediate future. New growth is present on all invasive weeds.

Control of viburnum leaf beetle may begin next week. New growth is present on viburnum, so insect activity is predicted to begin next week.

SEE ADJACENT MAP

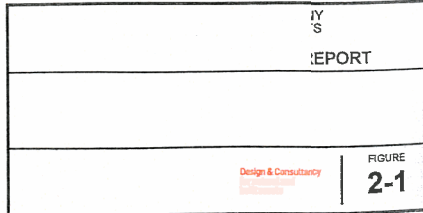


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CITY SYRACUSE, NY QW3GROUP EBC/MDV DB K BARTORI L POSENAUER PIC P KEANEY PM T BRIDGE TM L PUTNAM L YR (QD)N+ OF E+REF+  
C USGEO/transportOneDrive - ARCADISUBM 945 DONALD CORP ENV PROG/DGE SILVER LAKE 2017 PLANNING ASSIST/2017BALL 43152 4032G1-ENGLS1/2017AMR\_FIG 2-1 NON-HRRE INSPECTION.dwg LAYOUT 2-1 SAVED 1/26/2016 11 10 PM CADYVER 2015 (LMS TECH) PAGESETUP 1/26/2016



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## 5/29/18 ARCADIS SILVER LAKE INVASIVE WEED CONTROL

### 1<sup>ST</sup> APPLICATION WRITEUP

Some small accumulations of mugwort and spotted knapweed seedlings were located along sidewalk on east side of lake. Yellow iris seedlings found around entire perimeter of lake. Russian olive seedling treated along roadside on NW corner of lake.

Evidence of control of all species present

[VIEW MAP AND PHOTOS](#)

\*\*\*\*VIBURNUM LEAF BEETLE LARVA PRESENT ON VIBURNUMS ON THIS DATE!!!



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Sucker Growth on Red Maples.



Spotted Knapweed



Mugwort seedling



Spotted knapweed



Yellow Iris



Japanese Knapweed

Cypress Spurge



Colt's Foot,



Herbicide being dripped on phragmites



Phragmites



Active Viburnum Leaf Beetle larva activity.





Japanese Knotweed Patch near I9-9-36



Yellow Iris

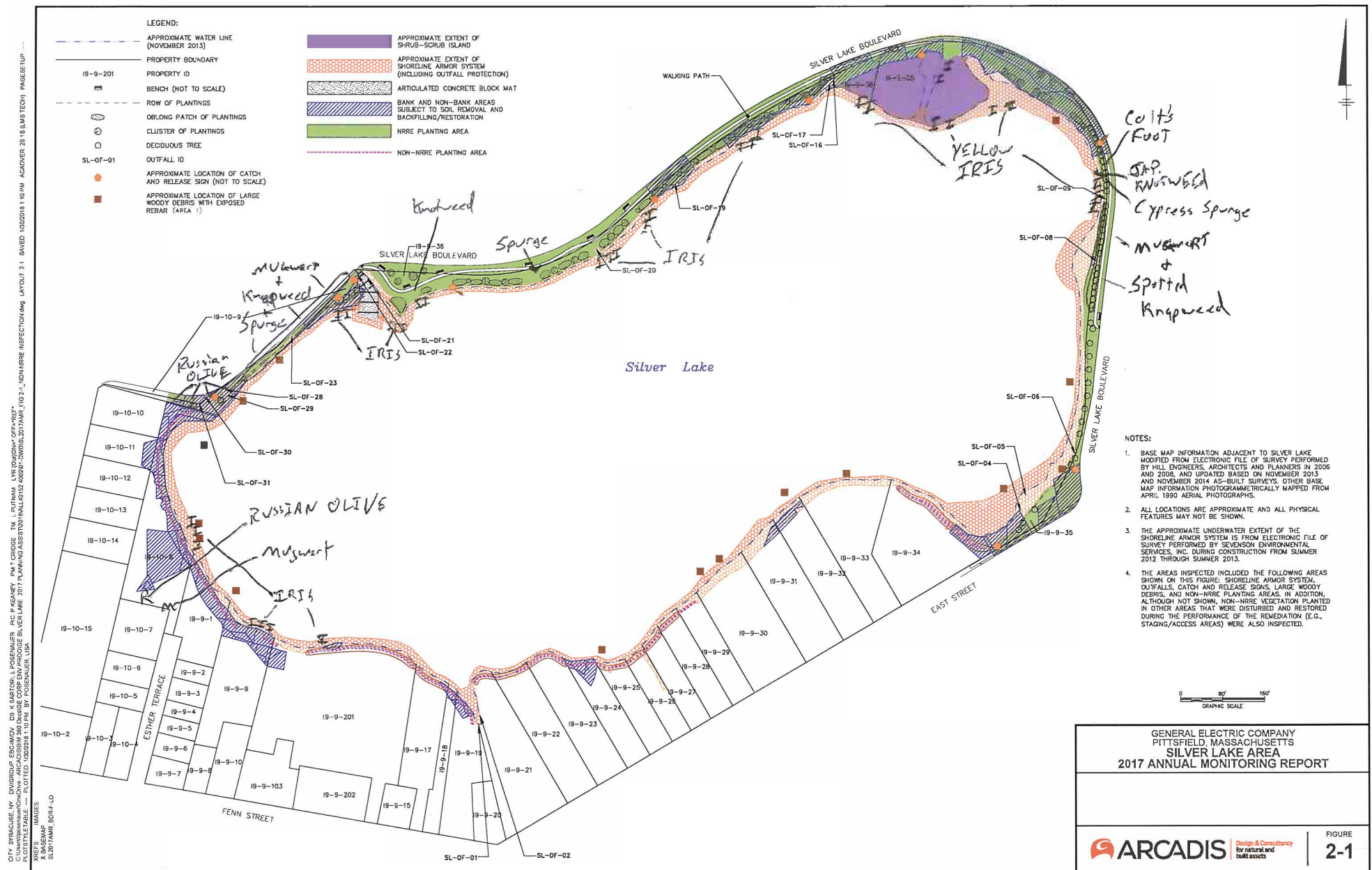




Yellow Iris Removed



5/29/18 1<sup>st</sup> Application



## ATTACHMENT B

ATTACHMENT B-1	
CHECKLIST FOR INSPECTION OF NATURAL RESOURCE RESTORATION/ENHANCEMENT MEASURES	
SILVER LAKE AREA	
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS	
I. GENERAL INFORMATION	
Inspection Date:	15-May-18
Conducted By/Phone Number:	Mike Long, Gregg Rabasco
Weather Conditions:	Mostly cloudy, 70 °F
II. INSPECTION SUMMARY	
1. <b>Shrub-Scrub Island Cap</b> <i>(Note any areas of the shrub-scrub island cap where the cap may be eroding [e.g., in areas along the edge of water that do not have armor stone] and any other conditions that could jeopardize the performance of the cap.)</i>	
- No areas of erosion or other conditions that could jeopardize the performance of the cap were observed.	
2. <b>Other Observations</b> <i>(Confirm that repair/maintenance activities identified during prior inspection, if any, have been performed; note any other general observations, including parcel-specific restoration activities.)</i>	
- Maintenance activities identified during the summer 2017 inspection (as described in the 2017 Annual Monitoring Report) were observed to have been performed, where appropriate.	
III. FOLLOW-UP MAINTENANCE AND REPAIR ACTIVITIES	
- None	

ATTACH ADDITIONAL INFORMATION AS APPROPRIATE

September 2018 – Summer 2018  
Inspection of Shoreline Armor  
System, Backfilled/Restored  
Areas, Potential NAPL Presence,  
and Non-Natural Resource  
Restoration / Enhancement  
Plantings





September 28, 2018

Mr. Christopher Smith  
U.S. Environmental Protection Agency, Region I  
Office of Site Remediation and Restoration  
5 Post Office Square - Suite 100  
Boston, MA 02109-3912

**Re: GE-Pittsfield/Housatonic River Site  
Silver Lake Area (GECD600)  
Summer 2018 Inspection of Shoreline Armor System, Backfilled/Restored Areas, Potential NAPL  
Presence, and Non-Natural Resource Restoration/Enhancement Plantings**

Dear Mr. Smith:

On August 29, 2018, the General Electric Company (GE) performed a post-remediation inspection at the Silver Lake Area Removal Action Area (RAA). That inspection was performed in accordance with the applicable requirements of the Post-Removal Site Control (PRSC) Plan included in GE's Final Completion Report (FCR) for the Silver Lake Area Removal Action, which was submitted to the U.S. Environmental Protection Agency (EPA) on May 20, 2015 and approved by EPA on June 22, 2015. In accordance with those requirements, the August 29, 2018 inspection focused on the following aspects of the remediation and restoration activities conducted at this RAA: (1) the shoreline armor system, including outfalls to Silver Lake; (2) the backfilled/restored areas adjacent to Silver Lake; (3) the potential presence of non-aqueous phase liquid (NAPL); and (4) certain restored plantings other than those installed as part of natural resource restoration/enhancement (NRRE) measures.<sup>1</sup> The locations of these remediation components are shown on Figure 1 (along with other aspects of the remediation and restoration that are subject to separate inspections).

Prior to the August 2018 inspection, GE's most recent prior post-remediation inspection of the above-listed remediation components was performed in May 2018, with a trip report on it submitted to EPA on June 18, 2018. EPA provided conditional approval of that report on July 9, 2018. A summary of all 2017 monitoring activities was included in GE's 2017 Annual Monitoring Report, which was submitted on March 23, 2018 and conditionally approved by EPA on April 25, 2018.

### **Pre-Inspection Activities**

The maintenance activities identified during the spring non-NRRE 2018 inspection summarized in GE's June 2018 trip report were completed prior to the summer 2018 monitoring event. Specifically, for large woody debris (LWD), where the safety cap was missing and/or new rebar was exposed, exposed rebar was either driven further into the ground such that the flat head of the rebar was flush with the LWD and/or re-capped with a more secure and

---

<sup>1</sup> The NRRE plantings and shrub-scrub island cap were also inspected on August 29, 2018 as part of NRRE monitoring activities, and a report on those monitoring activities will be submitted separately to the natural resource trustees, with a copy to EPA. Monitoring of the sediment cap in the lake was initiated on September 17, 2018 and will be completed this fall. A summary report on the cap monitoring activities will be submitted separately to EPA.

fitted cap. Seven of the eight locations identified during the spring 2018 inspection were addressed; however, the final location is not accessible from land, and as such was not modified.

In addition, between the spring 2018 monitoring event and the summer 2018 monitoring event, GE continued performance of the general invasive species control program on June 11 and 29, July 16, and August 2, 16, and 28, 2018. The reports associated with these treatments were provided to EPA via email on July 5, August 2, and September 10, 2018, and are included as Attachment A. GE conducted one additional general invasive species control program site visit on September 11, 2018, and the report associated with that treatment is also included in Attachment A.

## **Summary of Inspection and Results**

The August 29, 2018 inspection constituted the second of the 2018 semi-annual inspections of the shoreline armor system and the non-NRRE plantings subject to continued monitoring in accordance with the PRSC Plan in the FCR. It also constituted the required annual inspection of the backfilled/restored areas adjacent to Silver Lake, and the annual observations for the presence of NAPL. The monitoring activities were performed by Michael Long and Gregg Rabasco of Arcadis (on GE's behalf). The monitoring event was also attended by Izabela Zapisek of Avatar Environmental, Inc. (on EPA's behalf). Robin McEwan of Stantec and Thomas Potter of the Massachusetts Department of Environmental Protection (on behalf of the natural resource trustees) were also present to participate in the NRRE inspection performed the same day (to be addressed in a separate report); however, they did not participate in the non-NRRE inspection addressed in this report. An arborist from the Haupt Tree Company, Inc. (Haupt) was also present to support the vegetation inspections. The inspection activities and results are summarized below, along with any proposed follow-up actions. The items requiring response and the proposed follow-up actions are summarized in Table 1.

### ***Shoreline Armor System Inspection***

In accordance with the PRSC Plan in the FCR, the summer 2018 inspection of the shoreline armor system consisted of visual observations of that system to assess the effects, if any, of shoreline wave and/or wind action on the sediment cap/armor system along the shoreline and to identify any other conditions that could jeopardize the performance of that system. These included observations to identify any evidence of significant erosion of the shoreline (e.g., slope failure, ruts, gullies, washouts, or sloughing), any evidence of exposed geotextile in the in-water or on-shore portions of the armor system, and any other apparent deficiencies in the system. Further, as required by the PRSC Plan in the FCR, this inspection included an inspection of the outfalls that were protected and/or maintained during remediation activities (as listed and shown in Drawing 1 of Appendix F of the FCR) to identify any evidence of erosion, damage, or other conditions that could impair discharges from these outfalls.

On the day of the inspection (August 29, 2018), the mean flow in the Housatonic River was approximately 42.9 cubic feet per second (cfs), as measured at the U.S. Geological Survey (USGS) river gage in Coltsville. Since completion of the last inspection of these areas on May 15, 2018, multiple high-flow events (i.e., estimated flow greater than 440 cfs at the Coltsville gage) were observed:

- August 18, 2018 (daily mean 789 cfs)
- August 19, 2018 (daily mean 483 cfs)



The results of the summer 2018 inspection of the shoreline armor system are presented in inspection checklist B-1 provided in Attachment B. As indicated on that checklist, no areas within the armor system along the shoreline were observed with significant erosion (as defined above).

During the inspection of the outfalls that were protected and/or maintained during remediation activities, no significant erosion was observed, and no conditions were observed that could impair discharges from the outfalls. However, it was observed that armor stone on the bank above outfall SL-OF-09 has been displaced and exposed the underlying geotextile fabric (Photographs 1 and 2, Attachment C). To reduce the potential for bank erosion in this area, GE will anchor the geotextile fabric (if necessary) and place additional in-kind armor stone to again cover the fabric.

As noted above, GE performed maintenance activities to address the rebar exposed from the LWD. However, the one location identified during the spring 2018 inspection that is not accessible from land was not addressed. As this LWD is located in five feet or greater water depth, the exposed rebar is not considered to be a threat to public safety and no further action is required at this time. If exposed rebar is noted at this location or other locations during future inspections and is determined to be a potential threat to public safety, GE will address the exposed rebar as outlined in the May 2018 trip report, or if LWD accumulates at the outlet from Silver Lake to the Housatonic River, GE will discuss with EPA the need to remove such LWD from the outlet.

The second semi-annual inspection of the shoreline armor system conducted August 29, 2018 constituted the final monitoring event required by the 5-year program outlined in the PRSC Plan. Over the past five years of monitoring the shoreline armor system has generally met the Performance Standards without significant erosion of the shoreline and limited instances of exposed geotextile in the in-water or on-shore portions of the armor system. Additionally, the outfalls that were protected and/or maintained during remediation activities have consistently operated as designed. As such, GE proposes to terminate the shoreline armor system inspection program. However, during the 2019 monitoring event for the catch-and-release signs (discussed below) GE will monitor the area at which the repair actions outlined above (i.e., replacement of armor stone at SL-OF-09) are to be performed. Additionally, GE will inspect the shoreline armor system after severe storms (as defined in the PRSC Plan), if any, and if an excessive wind event occurs, as determined in consultation with EPA.

### ***Monitoring of Backfilled/Restored Areas Adjacent to the Lake and Other Disturbed Areas***

In accordance with the PRSC Plan in the FCR, the summer 2018 inspection of the backfilled/restored areas and other disturbed areas consisted of visual observations of those areas for the following: (a) evidence of erosion; (b) evidence of depressions and/or surface water ponding; (c) any areas where excessive settlement has occurred relative to the surrounding areas; (d) any drainage or growth problems; and (e) other conditions that could jeopardize the performance of the completed remediation actions.

The results of the summer 2018 inspection of backfilled/restored and other disturbed areas are presented in the inspection checklist B-2 provided in Attachment B. As indicated in that checklist, no instances of erosion of surface soils were observed and no areas of sparse vegetation were observed.

### ***Observations for the Presence of NAPL***

During the summer 2018 inspection, visual observations were made of the banks of Silver Lake, as well as the lake surface, for the presence of any apparent bank seeps of NAPL or NAPL sheens. The results of the summer 2018 inspection are included in inspection checklist B-2 provided in Attachment B. As indicated in that checklist,



no apparent seeps of NAPL or NAPL sheens were observed during the summer 2018 inspection. Thus, the Performance Standards for NAPL, as set forth in the Consent Decree, were met in the Silver Lake Area.

### ***Non-NRRE Vegetation Monitoring***

As noted in the 2015 Annual Monitoring Report, the summer 2015 inspection of the non-NRRE plantings and other vegetation was the last inspection required under the general two-year monitoring program specified for non-NRRE vegetation in the PRSC Plan in the FCR. However, based on replanting required since the completion of construction in 2013, semi-annual inspections of specific plantings was required in 2018. The summer 2018 non-NRRE vegetation monitoring included observations of the following plantings:

- Two Fraser fir trees replanted on Parcel I9-9-28 in the spring of 2016.

The summer 2018 inspection included observations and counts of the two trees noted above to assess the number, survival, and condition of those plantings. Table 2 summarizes the results of the observations/counts of the monitored shrubs and trees. As shown in that table, the two Fraser firs planted on Parcel I9-9-28 on May 31, 2016 were observed to be alive and healthy (Photograph 3, Attachment C). As the monitoring duration for the replanted trees was reset to two years after planting, the summer 2018 inspection constituted the final monitoring event for these trees and given the health of the trees no further action is required at this time.

In addition to the observations of the plantings, although not specifically required, the summer 2018 inspection included observations of the presence and extent of invasive plant species in the non-NRRE planting areas visited. During the summer 2018 inspection, trace invasive species were observed, and based on the observations made during the monitoring event, GE's consultant administering the general invasive species control program (i.e., Haupt) will visit the site in spring 2019 to determine whether to continue the general invasive species control program for the non-NRRE planting area in 2019 to address these trace invasive species and non-planted species.

### ***Summary***

The items identified during the summer 2018 inspection as requiring response actions and the completed and proposed follow-up actions are summarized in Table 1. As previously mentioned, some of those actions have already been implemented – namely continuation of the general invasive species control program. The remaining identified follow-up actions include addressing the displaced armor stone and geotextile fabric at SL-OF-09 and an informal evaluation in spring 2019 as to whether to continue the general invasive species control program in 2019.

### ***Future Activities***

In accordance with the PRSC Plan in the FCR, GE will implement the maintenance activities identified above and summarized in Table 1 (and not yet completed) within 90 days of the inspection date (i.e., by November 27, 2018) – assuming timely EPA approval – unless otherwise agreed to or specified by EPA.

As provided in the PRSC Plan, the next scheduled annual inspection of the catch-and-release signs will be conducted in 2019. Additionally, as noted above, the at that time GE will also evaluate the replacement of armor



stone at SL-OF-09.<sup>2</sup> These inspections will be performed in summer (i.e., August or September) concurrently with the inspections of the backfilled/restored areas adjacent to Silver lake and the potential presence of NAPL scheduled to be performed in 2019 in accordance with the PRSC Plan.<sup>3</sup> All such future inspections will be conducted in accordance with the PRSC Plan in the FCR. Reports will be submitted on all of these and other monitoring events performed in the Silver Lake Area and will include completed inspection checklists (if applicable).<sup>4</sup>

Please contact me if you have any questions regarding the information presented in this letter.

Sincerely,

  
Kevin G. Mooney  
Senior Project Manager  
Attachments

cc: Dean Tagliaferro, EPA\*  
Tim Conway, EPA (cover letter only)\*  
Chris Ferry, ASRC Primus\*  
Scott Campbell, Avatar\* (plus 2 hard copies)  
Robert Leitch, USACE\*  
Michael Gorski, MDEP\*  
John Ziegler, MDEP\*  
Eva Tor, MDEP\* (cover letter only)  
Thomas Potter, MDEP\*  
Nancy E. Harper, MA AG\* (cover letter only)  
Nate Joyner, Pittsfield Dept. of Community Development\*  
James McGrath, Pittsfield Dept. of Parks and Recreation\*  
Corydon Thurston, Executive Director, PEDAs\*  
Barbara Landau, Noble, Wickersham & Heart\*  
James Gagnon, O'Reilly, Talbot & Okun\*  
Rod McLaren, GE\* (cover letter only)  
Andrew Silber, GE\*  
James Bieke, Sidley Austin LLP  
Mark Gravelding, Todd Cridge, and Lauren Putnam, Arcadis\*  
GE Internal Repositories

*\* electronic copy only*

---

<sup>2</sup> EPA recommended in a September 3, 2015 conditional approval letter that the annual inspection of the catch-and-release signs on the banks be shifted from the late summer/early fall inspection to the spring inspection. However, as no spring inspection is scheduled for 2019, the catch-and-release signs will again be inspected during the summer, per the PRSC Plan schedule, such that the inspection can be performed concurrently with the inspections of the other non-NRRE areas (i.e., backfilled/restored areas, presence of NAPL).

<sup>3</sup> As indicated above, the NRRE plantings and other NRRE measures installed at the Silver Lake Area (including the shrub-scrub island cap) are subject to separate inspections in accordance with the Restoration Project Monitoring and Maintenance Plan in the FCR, and the schedule for future inspections beyond 2018 will be presented in a forthcoming letter on the August 29, 2018 inspection of those features, to be submitted separately to the natural resource trustees, with a copy to EPA.

<sup>4</sup> A formal report will not be submitted for the proposed informal evaluation to be performed by Haupt regarding the general invasive species control program. GE will communicate/coordinate directly with EPA regarding the recommendation by Haupt.

TABLES



**Table 1**  
**Summer 2018 Non-NRRE Areas/Items Requiring Response and Follow-Up Actions**

**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

No.	Area/Item Identified	Description	Completed Follow-up Action	Future Follow-up Action
1.	Area 2 - Armor Stone Displacement and Exposure of Fabric at SL-OF-09	Indication of armor stone displacement and exposure of geotextile fabric on the bank above SL-OF-09.	None	Anchor fabric, if necessary, and place additional armor stone in this area. Evaluate repairs in 2019.
2.	General - Non-NRRE Plantings - Invasive Species and Non-Planted Species	Trace invasive species observed.	Continued the general invasive species control program, including removal of non-planted species hindering the development of planted vegetation, with treatments as shown in Appendix A.	Continue the general invasive species control program through the first frost of 2018, including removal of any additional bindweed or other non-planted species that are observed to be hindering development of planted vegetation. During the next inspection, re-evaluate the need for continuing the invasive species control program in 2019.



**Table 2**  
**Summary of Summer 2018 Restored Vegetation Inspection in the Non-NRRE Areas**

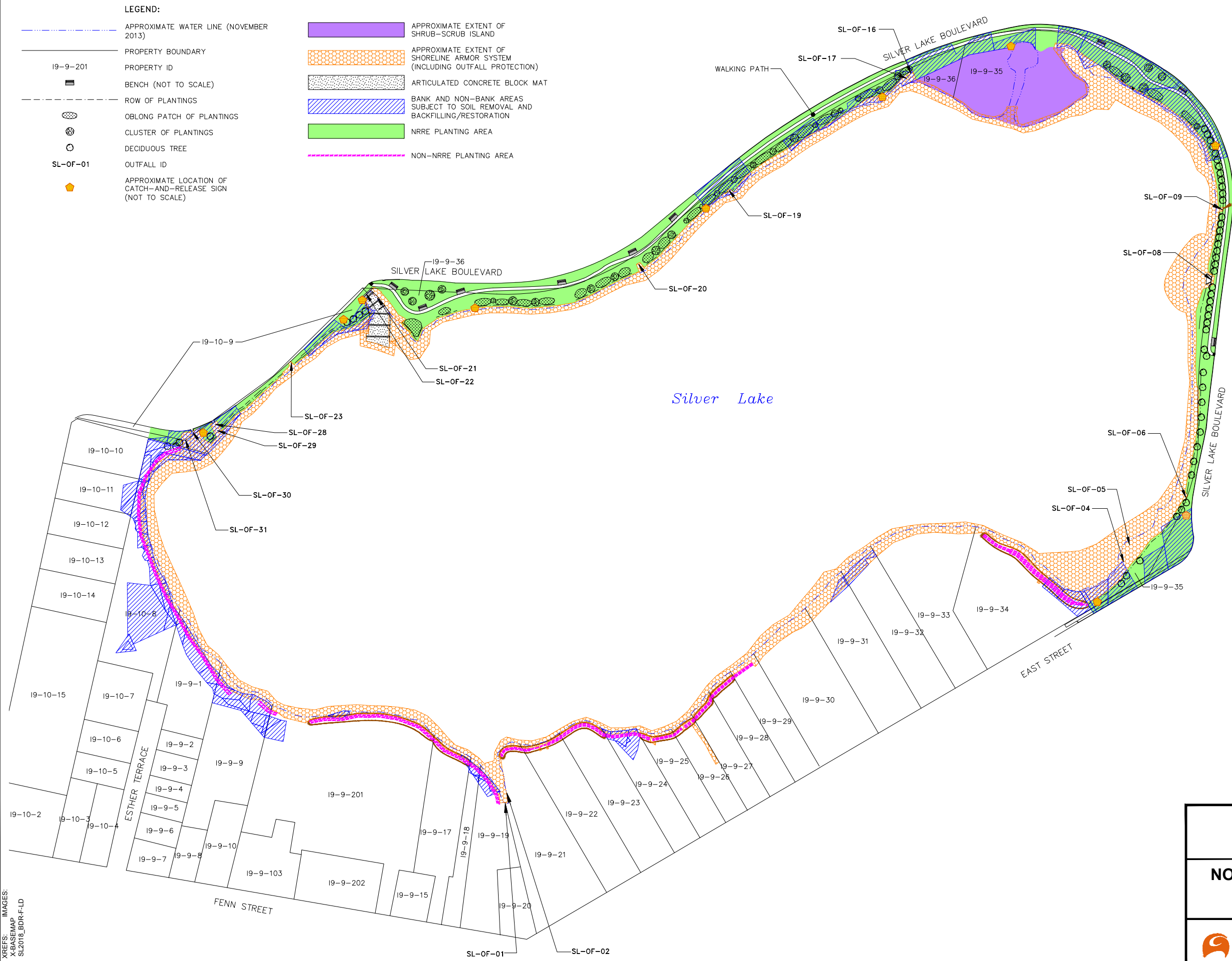
**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

Species	Quantity to be Monitored	Quantity Observed Not Stressed or Dead	Quantity Observed Stressed	Quantity Observed Dead
<b>19-9-28</b>				
Fraser Fir	2	2	0	0

FIGURE



CITY: SYRACUSE, NY DIV: GROUP: EBC-IMDV DE: K. SARTORI PIC: P. KEANEY PM: T. CRIDGE TM: L. PUTNAM LVR: (OPTION) = "OFF" = REF\*  
C:\Users\PA01041\OneDrive - ARCADIS\BIM 360 Docs\GE CORP ENV PROJ\GE SILVER LAKE 2017 PLANNING ASSIST\2018\AL40152.402\201-DWG\SL2018\_FIG 1\_NON-NRRE INSPECTION-new.dwg LAYOUT: 1 SAVED: 9/26/2018 11:07 AM ACADVER: 21.05 (LMS TECH) PAGESETUP: ---  
PLOTSTYLETABLE: --- PLOTTED: 9/26/2018 11:13 AM BY: ANJAY KUMAR, PAVAN KUMAR  
XREFS: IMAGES: SL2018\_BOR-F-ID



- LEGEND:**
- APPROXIMATE WATER LINE (NOVEMBER 2013)
  - PROPERTY BOUNDARY
  - PROPERTY ID
  - BENCH (NOT TO SCALE)
  - ROW OF PLANTINGS
  - OBLONG PATCH OF PLANTINGS
  - CLUSTER OF PLANTINGS
  - DECIDUOUS TREE
  - OUTFALL ID
  - APPROXIMATE LOCATION OF CATCH-AND-RELEASE SIGN (NOT TO SCALE)
  - APPROXIMATE EXTENT OF SHRUB-SCRUB ISLAND
  - APPROXIMATE EXTENT OF SHORELINE ARMOR SYSTEM (INCLUDING OUTFALL PROTECTION)
  - ARTICULATED CONCRETE BLOCK MAT
  - BANK AND NON-BANK AREAS SUBJECT TO SOIL REMOVAL AND BACKFILLING/RESTORATION
  - NRRE PLANTING AREA
  - NON-NRRE PLANTING AREA

- NOTES:**
1. BASE MAP INFORMATION ADJACENT TO SILVER LAKE MODIFIED FROM ELECTRONIC FILE OF SURVEY PERFORMED BY HILL ENGINEERS, ARCHITECTS AND PLANNERS IN 2006 AND 2008, AND UPDATED BASED ON NOVEMBER 2013 AND NOVEMBER 2014 AS-BUILT SURVEYS. OTHER BASE MAP INFORMATION PHOTOGRAMMETRICALLY MAPPED FROM APRIL 1990 AERIAL PHOTOGRAPHS.
  2. ALL LOCATIONS ARE APPROXIMATE AND ALL PHYSICAL FEATURES MAY NOT BE SHOWN.
  3. THE APPROXIMATE UNDERWATER EXTENT OF THE SHORELINE ARMOR SYSTEM IS FROM ELECTRONIC FILE OF SURVEY PERFORMED BY SEVENSON ENVIRONMENTAL SERVICES, INC. DURING CONSTRUCTION FROM SUMMER 2012 THROUGH SUMMER 2013.
  4. THE AREAS INSPECTED INCLUDED THE FOLLOWING AREAS SHOWN ON THIS FIGURE: SHORELINE ARMOR SYSTEM, OUTFALLS, CATCH AND RELEASE SIGNS, LARGE WOODY DEBRIS, AND NON-NRRE PLANTING AREAS. IN ADDITION, ALTHOUGH NOT SHOWN, NON-NRRE VEGETATION PLANTED IN OTHER AREAS THAT WERE DISTURBED AND RESTORED DURING THE PERFORMANCE OF THE REMEDIATION (E.G., STAGING/ACCESS AREAS) WERE ALSO INSPECTED.



GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS  
**SILVER LAKE AREA**

**NON-NRRE COMPONENTS SUBJECT  
TO INSPECTION AND AREAS  
IDENTIFIED FOR FOLLOW-UP**



Design & Consultancy  
for natural and  
built assets

FIGURE  
**1**



ATTACHMENT A



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## 6/11/18 SILVER LAKE INVASIVE WEED 2<sup>ND</sup> TREATMENT

RODEO applied at 6.5oz/g with backpack sprayer

Signs of last treatment present throughout. One large patch of Mugwort found growing adjacent to patch of Japanese Knotweed on east side of lake. Yellow iris seedlings present all around water's edge. Yellow iris plants hand removed. 3 large Russian olive plants growing in field area on south side of lake.

SEE ATTACHED MAP AND PHOTOS

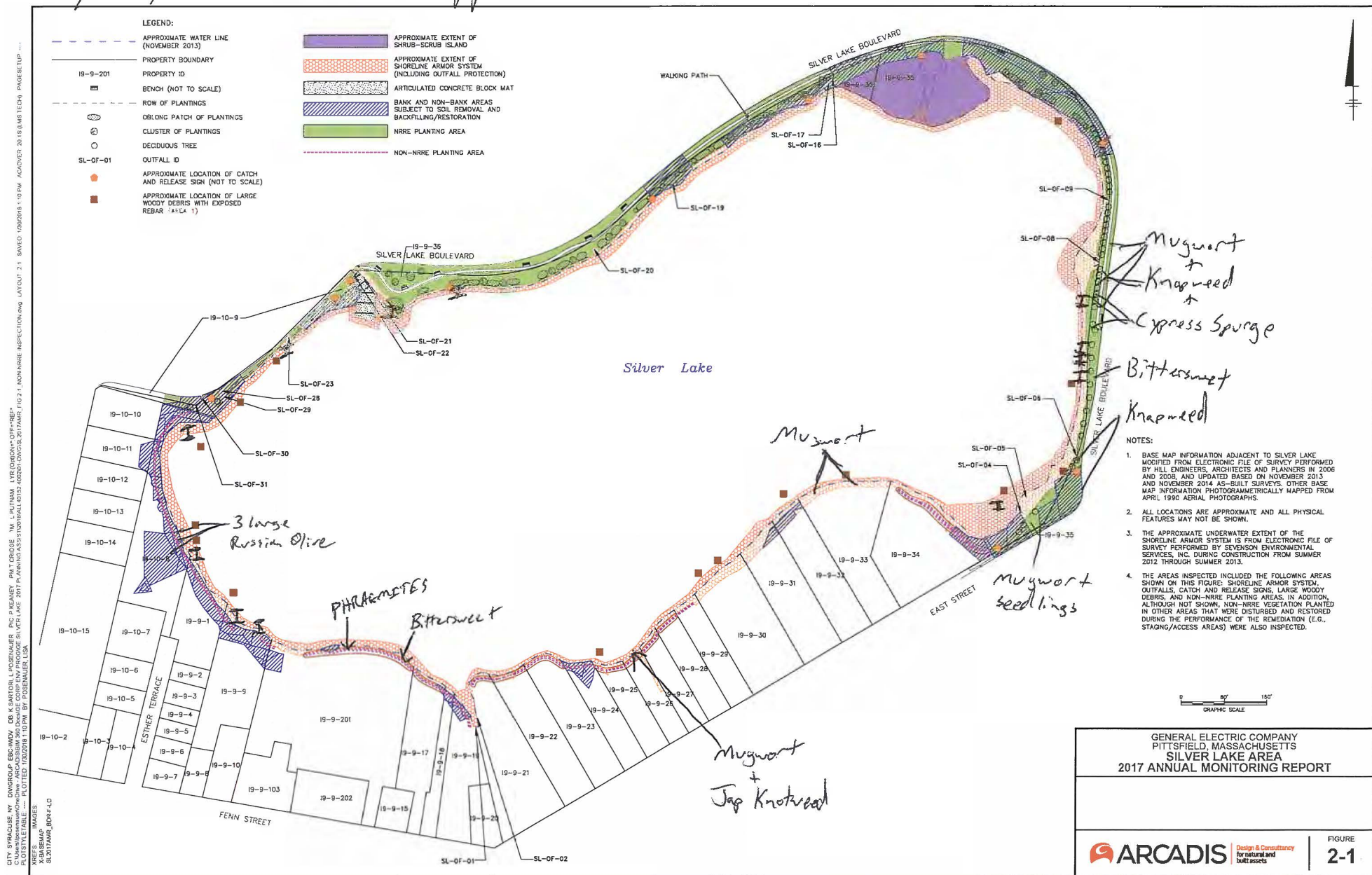


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6/11/18 2nd Application





Mugwort, seedling



REMOVED

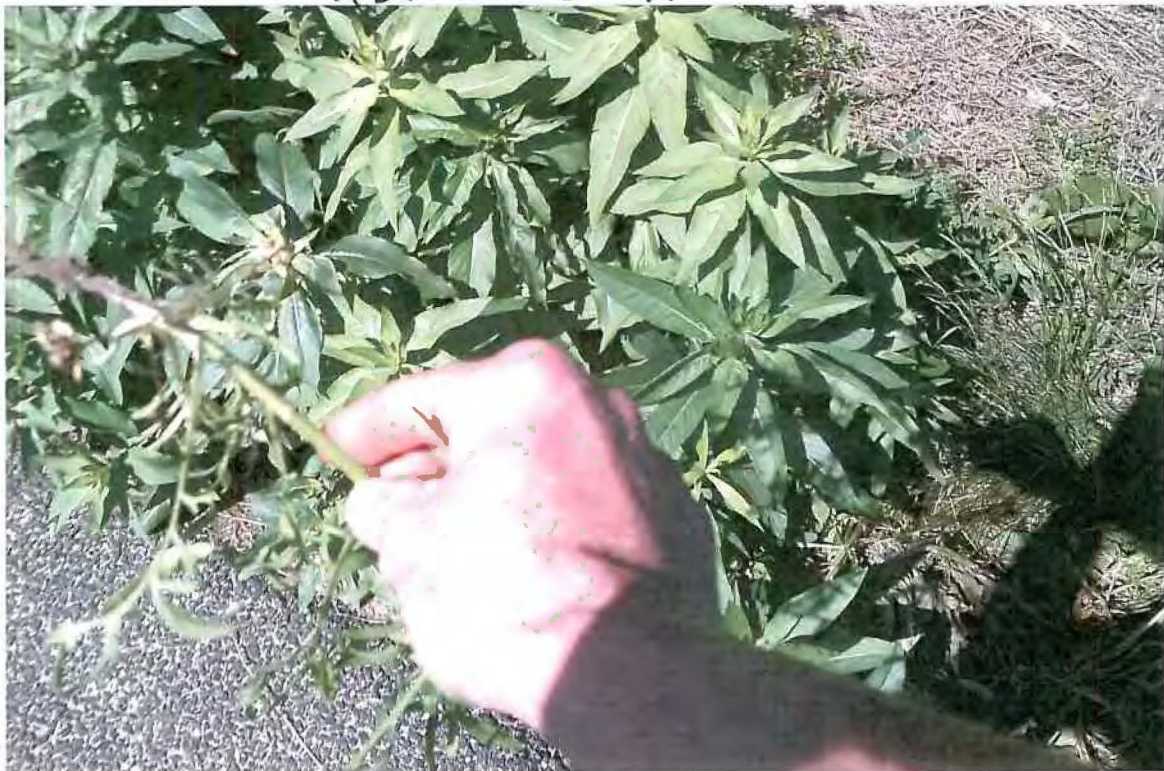




Spotted Knapweed Seedling



REMOVED!!!





Cypress Spurge



Yellow Iris





Yellow Iris REMOVED!!!



PHRAGMITES





Blurry Plant Matter



MUGWORT

Japanese Knotweed





Japanese Knotweed Patch treated last  
Apr.



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6/29/18 ARCADIS SILVER LAKE SITE 3<sup>RD</sup> TREATMENT

RODEO MIXED @ 6.5OZ/G APPLIED WITH BACKPACK SPRAYER

Evidence of past treatments throughout entire area. Yellow iris seedlings that were hand removed 1<sup>st</sup> and 2<sup>nd</sup> treatment but roots remained, treated with herbicide on this date. Mugwort and spotted knapweed seedlings accumulations near planted row of trees, treated on this date. Purple Loosestrife plants identified on this date, some hand removed some treated, the rest will be treated next application.

SEE MAP AND PHOTOS



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MUGWORT SEEDLINGS



Spotted Knapweed Seedlings







Spotted Knapweed Seedling





Knapweed "KNOT"



Knapweed Seedling





Mugwort seedling



MUGWORT seedling





Cypress Spurge  
~~Colt's Foot~~      Close by  
Knapweed      Mugwort



Yellow Iris      Colt's Foot





# PHRAGMITES





PHRAG "KNOTS"





PHRAGMITES on SSI







Mugwort seedlings



Cypress Spurge



Yellow Iris



Cypress Spurge





Spotted Knapweed



Yellow Iris





PURPLE LOOSESTRIFE !!!



DEAD JAPANESE KNOTWEED





PURPLE LOOSESTRIPE REMOVED



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7/16/18 SILVER LAKE INVASIVE WEED CONTROL

RODEO MIXED @ 6.5OZ/GAL APPLIED WITH BACKPACK SPRAYER

Signs of past treatments present throughout entire area. Purple Loosestrife plants present in patches around entire perimeter of lake close to the edge of water. Some of these plants are flowering but most not in bloom yet. Mugwort seedlings are rapidly growing at this time, making them easier to spot in taller areas. Yellow iris plants treated with herbicide for second consecutive application. A few colts foot plants treated growing under bushes in various spots.

SEE ATTACHED MAP AND PHOTOS



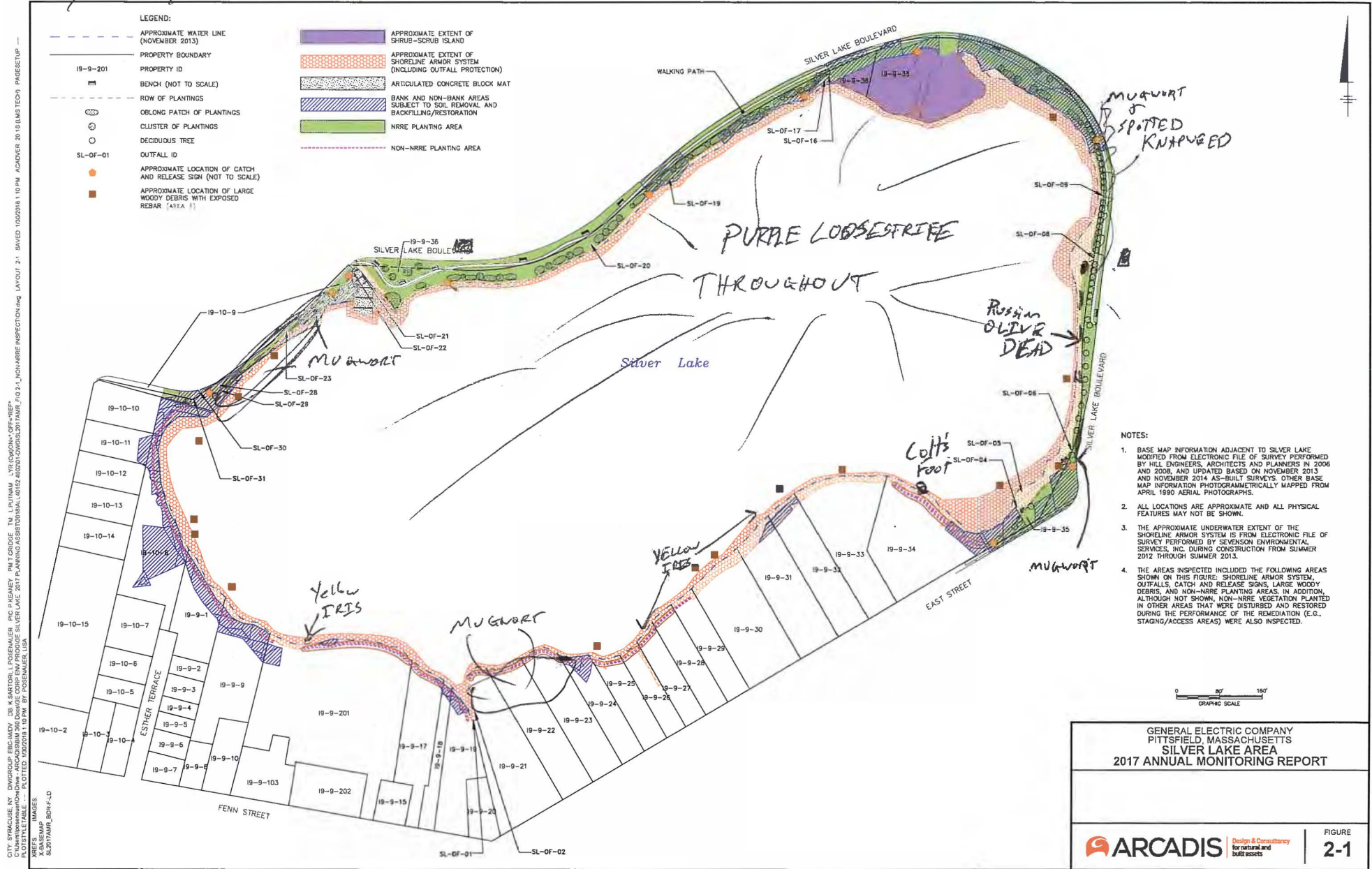
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# 7/16/18 Silver Lake Invasive Treatment





MUGWORT seedlings



PURPLE LOOSESTRIFE





RUSSIAN OLIVE still trying to live



Yellow Iris treated last year & now





Purple Loosestrife & Colt's Foot



Mugwort and spotted knapweed





1 Purple Loosestrife



Dead Phragmites





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**8/2/18 ARCADIS SILVER LAKE 5TH INVASIVE WEED CONTROL TREATMENT**

**RODEO MIXED @6.5OZ/G APPLIED WITH BACKPACK SPRAYER**

Control measures implemented throughout the entire perimeter of lake appear to effecting some control. Mugwort seedlings are actively growing in most areas where mugwort has been found growing in the past and they have been treated. Phragmites patch found near SSI treated.

Colts foot, yellow iris, purple loosestrife, bittersweet, russian olive, tatarian honeysuckle, phragmites, and cypress spurge are showing signs of overall control. Meaning these species are not as prevalent as years past. New seedling will always be present; however, evidence of prior work is noticeable. If plants encountered have been treated in past; and showing signs of control, we have not been treating them. If recently sprouted plants are encountered, they are treated as appropriate.

The strip of plant material growing between Silver Lake Blvd and the sidewalk has not been mowed in what I would estimate a month. This has allowed mugwort and spotted knapweed that has been mowed multiple times to grow up. With such large root stock, these plants have grown very large very rapidly. Much time was spent hand removing large plants in this entire western and northern edge of lake, in order to avoid the spreading of seeds.

Water chestnut plants found invading Silver Lake through large drain pipe from adjacent pond across Silver Lake Blvd.

SEE MAP AND PHOTOS



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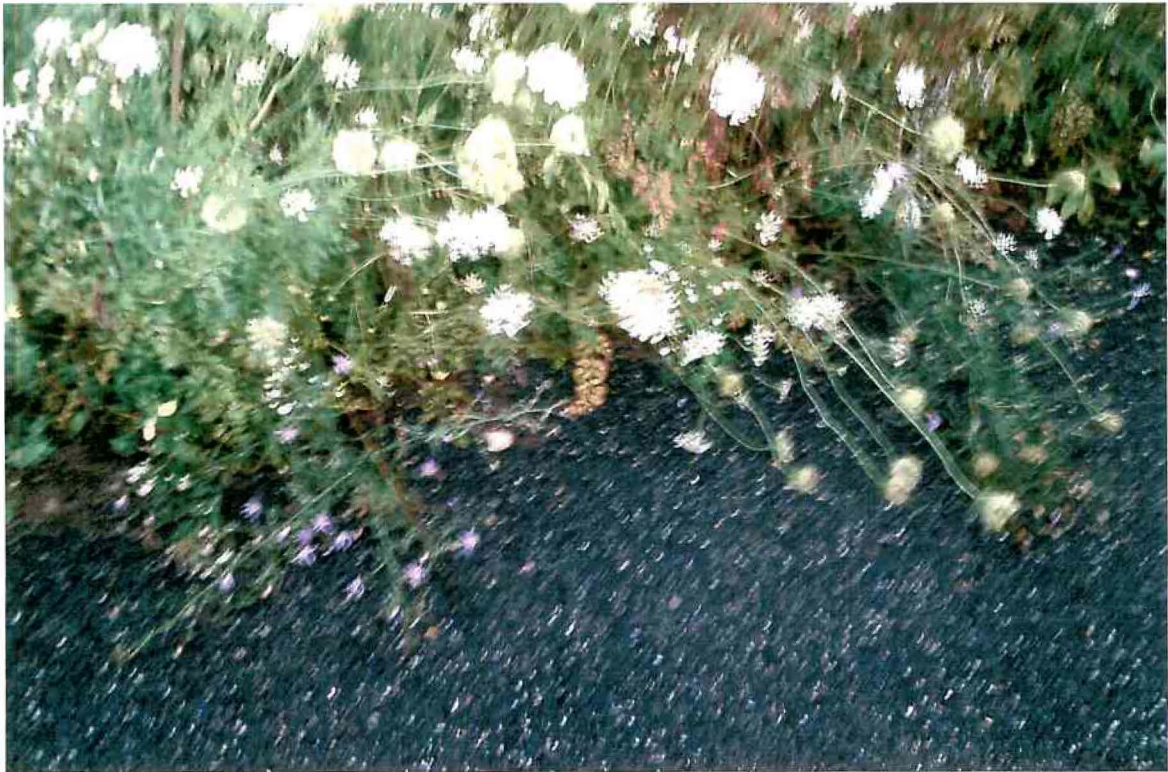




Mugwort



Spotted knapweed

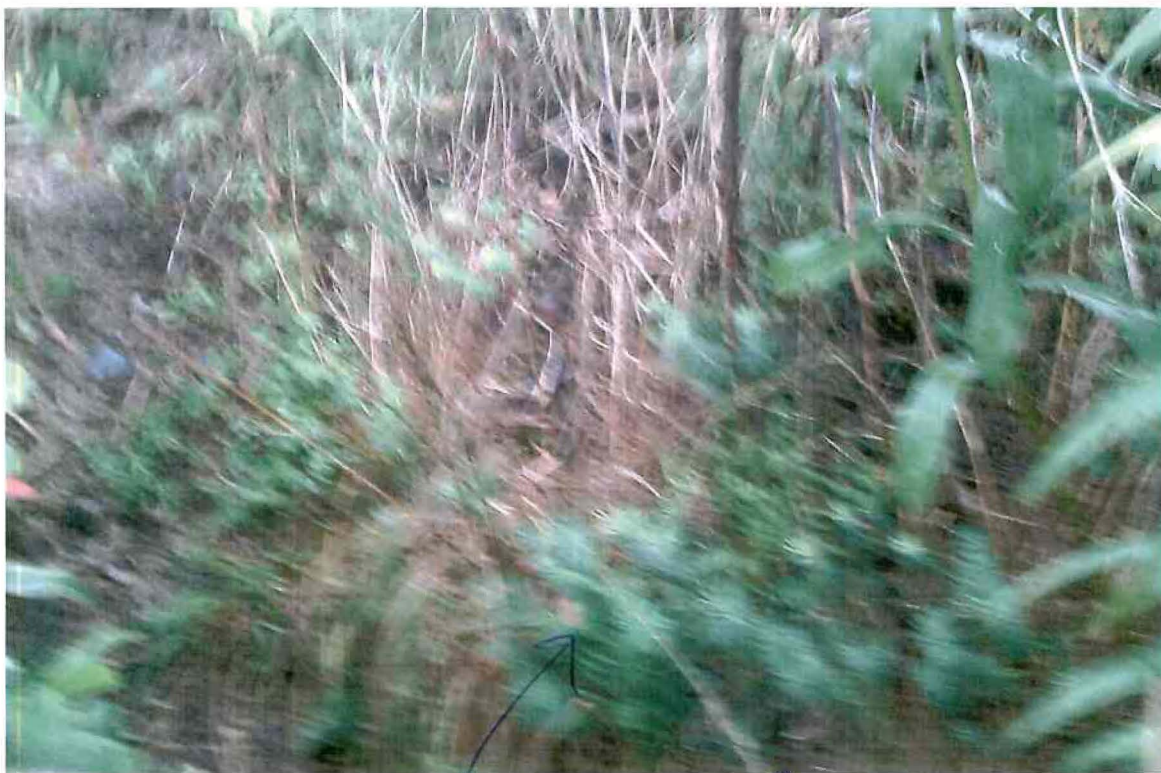




Spotted knapweed patch



adjacent ⇕



Cypress spurge ↗



Water chestnuts invading



Spotted  
Knapweed

Mugwort





Mugwort



NOT MOWED





Spotted knapweed

Large taproot  
removed



Grapevine severed and removed from Dogwood





Sidewalk



Large Spotted Knapweed root Large





Water Chestnut



Purple Loosestrife





Phragmite



Phragmite patch





Purple Loosestrife



Purple Loosestrife





Cypress Spurge



Water Chestnut





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## 8/16/18 SILVER LAKE 6<sup>TH</sup> INVASIVE TREATMENT

RODEO MIXED @6.5OZ/G APPLIED WITH BACKPACK SPRAYER

Treatment of invasive weed species identified; Russian olive, yellow iris, spotted knapweed, cypress spurge, colt's foot, mugwort, phragmites, and purple loosestrife completed. Large Canada thistle plant cut and removed from east side. Large concentration of mugwort treated SW corner of lake. Phragmites patch hand pulled out of water on north side of lake. This is second year this patch has been manually removed. Further attention to this small phragmite patch will yield control in future. Purple Loosestrife plants deflowered and treated especially in SSI areas.

SEE MAP AND PHOTOS

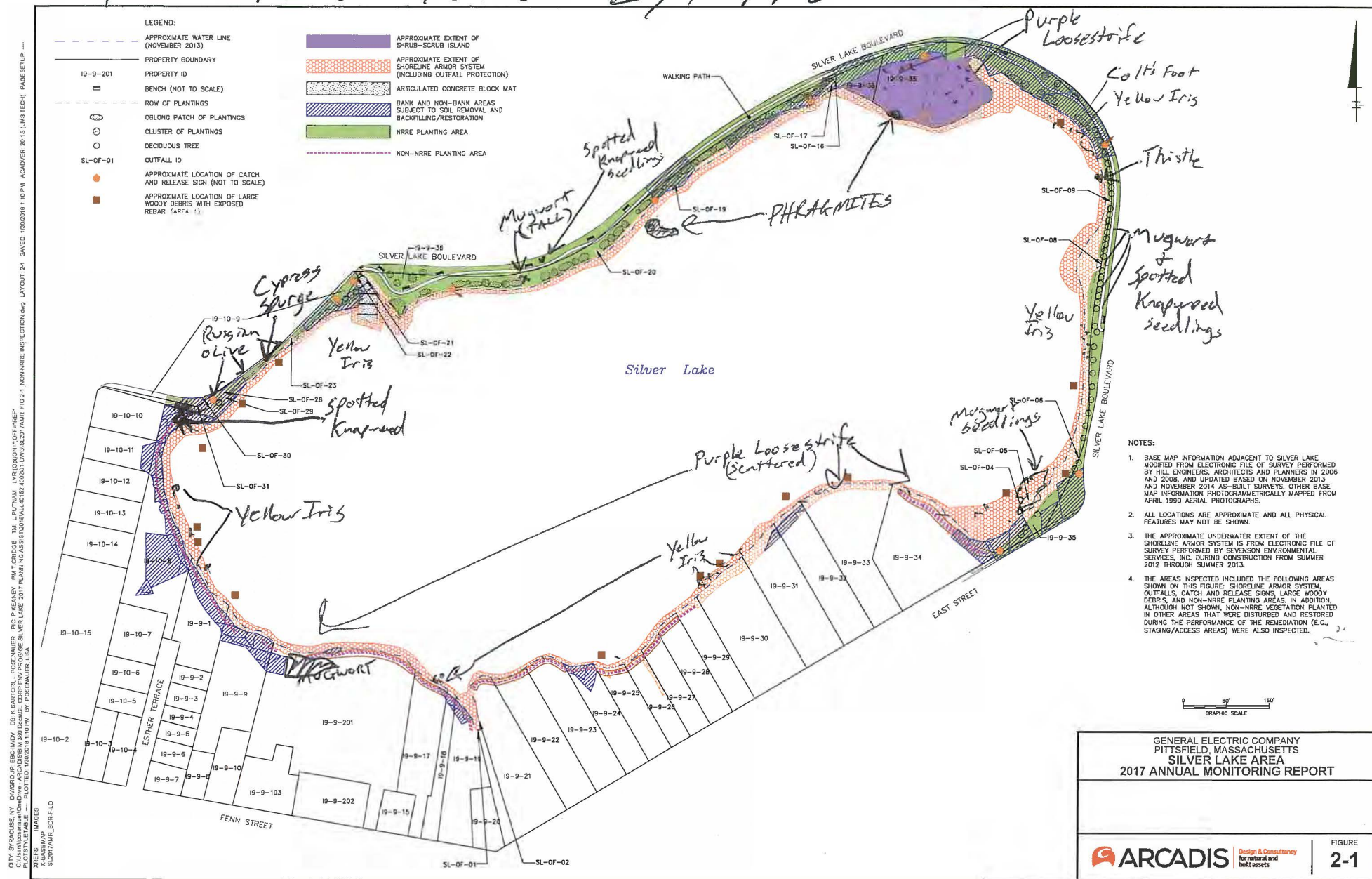


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# Silver Lake 6<sup>th</sup> treatment 8/15/18





Canada  
Large Thistle



Purple Loosestrife





Yellow Iris



PHRAGS Treated 5<sup>th</sup> treatment (DEAD)





Phragmites



PHRAG Patch in water





Removed



Mugwort





Spotted Knapweed Seedlings



Cypress Spurge





Russian Olive (stump growth treated)



Mugwort Seedling





Mugwort + Spotted Knapweed



Purple Loosestrife





Mugwort seedlings



Mugwort Patch (SW)





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8/28/18 ARCADIS SILVER LAKE 7<sup>TH</sup> TREATMENT

RODEO MIXED @ 6.5OZ/GAL APPLIED WITH BACKPACK SPRAYER

Mugwort seedlings present around entire perimeter of lake. Large concentration of mugwort treated SW corner of lake. Purple loosestrife and yellow iris very loosely scattered around entire perimeter of lake. Spotted knapweed seedlings located mainly along sidewalk on NE end. Phragmites found growing in water on SE corner and in center of north side. Japanese knotweed plants treated in same two locations as past; behind old fast food chicken and nearby. Grapevines removed from dogwood plants behind Mazda dealer. Two Russian olive plants treated.

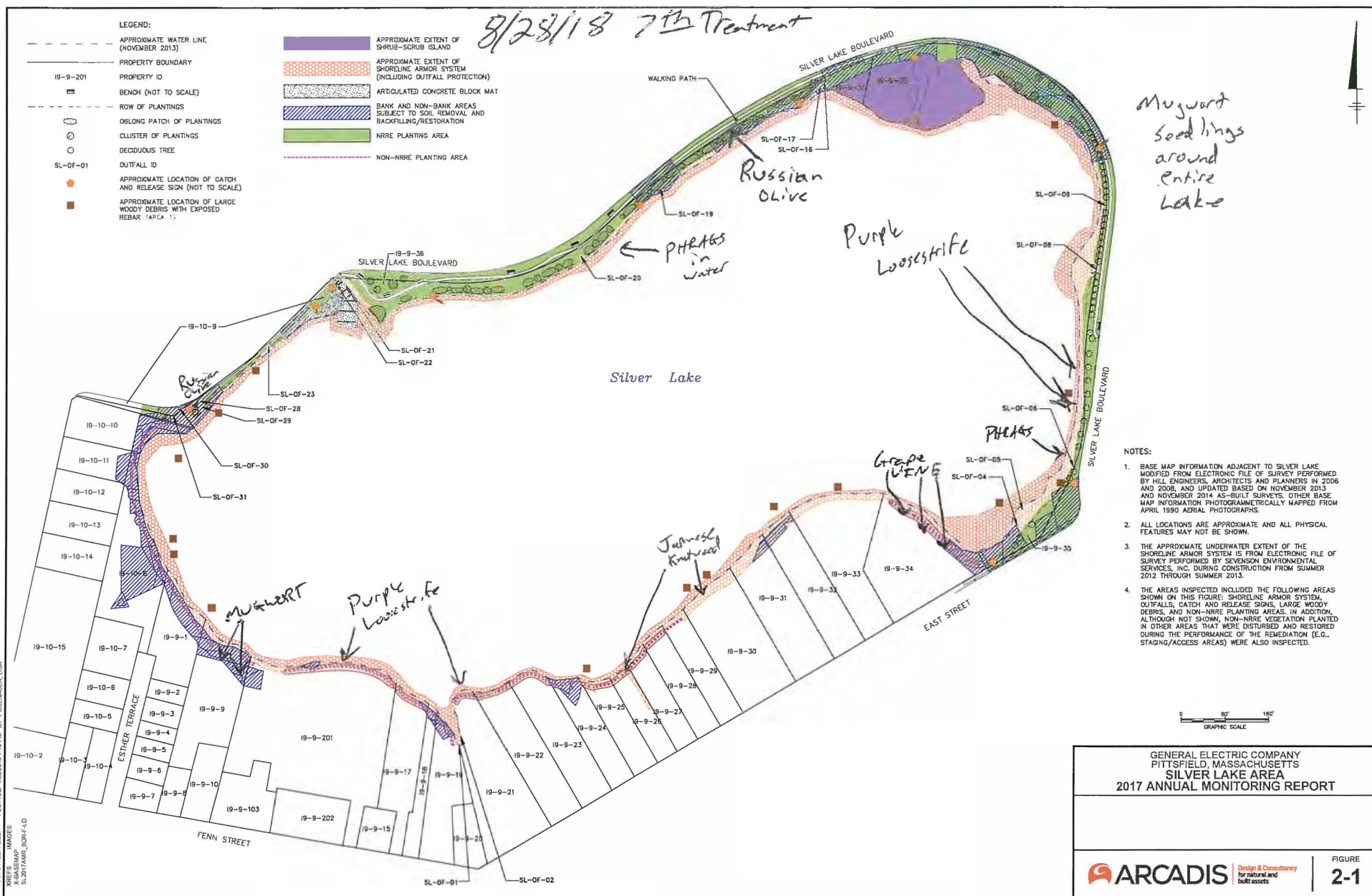
SEE MAP AND PHOTOS.



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Japanese Knotweed



Virginia Creeper & Grapevine Removed from plants





Grape Vine



Mugwort Seedlings





Spotted Knapweed



Grapevine





Purple Loosestrife





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9/11/18 ARCADIS SILVER LAKE 8<sup>TH</sup> TREATMENT WRITE UP

RODEO MIXED @6.5OZ/GAL APPLIED WITH BACKPACK SPRAYER

Water Chestnut plants removed from water along eastern shoreline. Phragmites found in water alongside water chestnut in northeast corner. Purple Loosestrife growing in scattered locations around lake perimeter deflowered. Russian olive, black locust, and buckthorn plants cut to ground level along north shore. Bittersweet cut to ground level. Mugwort seedlings scattered around entire perimeter. Two colt's foot plants treated northeast corner.

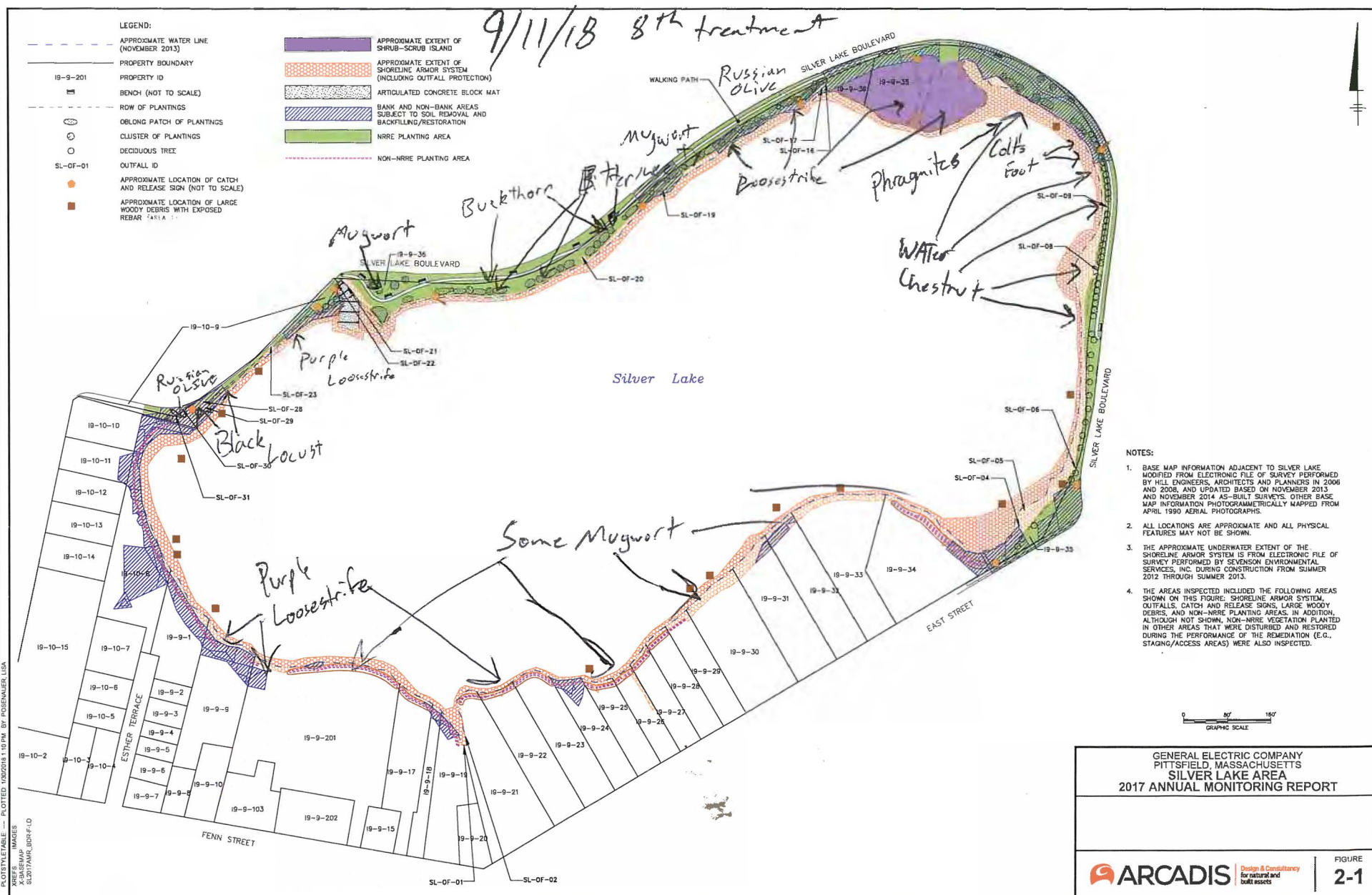
SEE MAP AND PHOTOS



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Water Chestnut



Front of Drainage Pipe

Water Chestnut Removed



Water chestnut





Water Chestnut



Water Chestnut



ATTACHMENT B





**ATTACHMENT B-1**  
**CHECKLIST FOR VISUAL INSPECTION OF SHORELINE ARMORING**  
**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

**I. GENERAL INFORMATION**

Inspection Date: 29-Aug-18  
 Conducted By/Phone Number: Mike Long, Gregg Rabasco  
 Weather Conditions: Clear, sunny, 80-90 degrees Fahrenheit  
 Date of Last Inspection: 15-May-18

**II. INSPECTION SUMMARY**

1. **Preliminary Inspection Activities** (*Confirm that Figure 8-1 of the Final Completion Report for Silver Lake Area Removal Action and the as-built drawings of the shoreline armor system provided in Appendix F of that document have been reviewed in the field during the inspection.*)  
 - Figure 8-1 of the Final Completion Report and the as-built drawings of the shoreline armor system provided in Appendix F of that document were reviewed in the field.
2. **Shoreline Armoring** (*Note any physical changes since last inspection; note evidence of significant erosion of the shoreline [e.g., slope failure, ruts, gullies, washouts, or sloughing], and if any erosion is observed, evaluate whether there are any eroded soils remaining in the lake; note any evidence of visible geotextile beneath the in-water or on-shore portions of the armor system; note other conditions that could jeopardize the performance of the completed remediation actions.*)  
 - No significant erosion was observed in the armor system along the shoreline.
3. **Protected/Maintained Outfalls** (*Inspect the outfalls that were protected and/or maintained during remediation activities, as listed and shown on Drawing 1 of Appendix F to the Final Completion Report; note any evidence of erosion or damage or other condition that could impair discharges from these outfalls.*)  
 - No significant erosion was observed, and no conditions were observed that could impair discharges from the outfalls.  
 - Displacement of armor stone and exposure of geotextile fabric was observed at SL-OF-09.
4. **Other Observations** (*Confirm that repair/maintenance activities identified during prior inspection, if any, have been performed; note any other general observations, including parcel-specific restoration activities.*)  
 - Seven of the eight locations at which rebar was observed during spring 2018 to be exposed above the LWD were modified in June 2018.  
 The remaining location is not accessible from land and no further action is required at this time.

**III. FOLLOW-UP MAINTENANCE AND REPAIR ACTIVITIES**

- At SL-OF-09, anchor geotextile fabric, if needed, and place additional armor stone to cover fabric.

**ATTACHMENT B-2**  
**CHECKLIST FOR VISUAL INSPECTION OF RESTORED AREAS ADJACENT TO LAKE**  
**INSPECTION OF BACKFILLED/RESTORED AREAS AND OTHER ITEMS**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

**I. GENERAL INFORMATION**

Inspection Date: 29-Aug-18  
Conducted By: Mike Long, Gregg Rabasco  
Weather Conditions: Clear, sunny, 80-90 degrees Fahrenheit  
Date of Last Inspection: 6-Sep-17

**II. INSPECTION SUMMARY**

**1. Preliminary Inspection Activities** *(Confirm that Figure 8-1 of the Final Completion Report for Silver Lake Area Removal Action and the as-built drawings provided in Appendix F of that document have been reviewed in the field during the inspection.)*

- Figure 8-1 of the Final Completion Report and the as-built drawings of the shoreline armor system provided in Appendix F of that document were reviewed in the field.

**2. Backfilled/Restored Areas** *(Note any physical changes since last inspection; note evidence of any of the following: soil or gravel erosion, effectiveness of erosion controls in areas where vegetation is not established, depressions or surface water ponding, excessive settlement, drainage or growth problems, stressed or sparse cover [for a two-year period after planting], other conditions that could jeopardize the performance of the completed remediation actions, etc.. If any conditions are present, note the parcel number where such conditions are observed.)*

- No significant physical changes since last inspection or evidence of erosion, depressions, settlement, drainage/growth problems, etc.

**3. NAPL Observations** *(Note any apparent seeps of non-aqueous-phase liquid (NAPL) from the banks or NAPL sheens on the lake surface.)*

- No apparent seeps of NAPL or NAPL sheens were observed.

**4. Other Observations** *(Confirm that repair/maintenance activities identified during prior inspection, if any, have been performed; note any other general observations, including parcel-specific restoration activities.)*

- None

**III. FOLLOW-UP MAINTENANCE AND REPAIR ACTIVITIES**

- None



ATTACHMENT C



**Photograph 1: Displaced armor stone and exposed geotextile at SL-OF-09 (looking up-bank).**



**Photograph 2: Displaced armor stone and exposed geotextile at SL-OF-09 (looking down-bank).**





Photograph 3: Fraser firs trees looking alive and healthy on Parcel I9-9-28.



October 26, 2018 - Summer  
2018 Inspection of Natural  
Resource / Enhancement  
Measures





October 26, 2018

Ms. Thomas Potter  
Lead Administrative Trustee  
MassDEP Bureau of Waste Site Cleanup  
One Winter Street, 8<sup>th</sup> Floor  
Boston, Massachusetts 02108

**Re: GE-Pittsfield/Housatonic River Site  
Silver Lake Area (GECD600)  
Summer 2018 Inspection of Natural Resource Restoration/Enhancement Measures**

Dear Mr. Potter:

On August 29, 2018 the General Electric Company (GE) performed the summer 2018 inspection of the natural resource restoration/enhancement (NRRE) measures at the Silver Lake Area Removal Action Area (RAA). That inspection was performed in accordance with the applicable requirements of the Restoration Project Monitoring and Maintenance (RPMM) Plan included in GE's Final Completion Report (FCR) for the Silver Lake Area Removal Action, which was submitted to the U.S. Environmental Protection Agency (EPA) on May 20, 2015 and approved by EPA on June 22, 2015. In accordance with those requirements, the summer 2018 inspection focused on the following restoration activities conducted at this RAA: (1) the cap placed over the shrub-scrub island; and (2) the plantings installed as part of NRRE measures.<sup>1</sup> The locations of these remediation components are shown on Figure 1 (along with other aspects of the remediation and restoration that are subject to separate inspections).

GE's most recent prior inspection of the shrub-scrub island cap NRRE measure at this RAA was performed in May 2018, with a trip report on it submitted to the natural resource trustees (Trustees), through the Lead Administrative Trustee (LAT) on June 18, 2018. The Trustees provided conditional approval of that report on September 17, 2018. The most recent prior inspection of the NRRE plantings was performed in September 2017, with a final trip report on it submitted to the Trustees on February 28, 2018. The Trustees provided conditional approval of that report on April 24, 2018. A summary of all 2017 monitoring activities was included in GE's 2017 Annual Monitoring Report, which was submitted on March 23, 2018 and conditionally approved by EPA on April 25, 2018.

### **Pre-Inspection Activities**

The repair and maintenance activities identified during the spring NRRE 2018 inspection (as described in GE's June 2018 report on the spring 2018 inspection) were completed prior to the August 2018 inspection. Several of those activities were completed prior to, and documented in, the June 2018 trip report. In addition, performance of the general invasive species control program was continued, including treatments on June 11 and 29, July 16, August 2, 16, and 28, and September 11, 2018 (the last of which occurred after the summer NRRE inspection), as discussed further below. The reports associated with the June

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<sup>1</sup> The non-NRRE components (i.e., shoreline armor protection system, backfilled/restored areas, the potential presence of non-aqueous phase liquid, and the non-NRRE plantings) at this RAA were also inspected August 29, 2018, as part of non-NRRE monitoring activities, and a report on those monitoring activities was submitted to EPA on September 28, 2018. The sediment cap in the lake were monitored in fall 2018, and a report on those activities will be submitted to EPA under separate cover once validated analytical results are received.



treatments were provided to the Trustees via email on July 5, 2018, the report associated with the July treatment was provided to the Trustees via email on August 2, 2018, the reports associated with the August treatments were provided to the Trustees via email on September 10, 2018, and the report associated with the September treatment was provided to the Trustees via email on October 8, 2018. Copies of all seven reports are included in Attachment A.

## **Summary of Inspection and Results**

The August 29, 2018 NRRE inspection constituted the second of the 2018 semi-annual inspections of the shrub-scrub island cap and the 2018 annual inspection of the NRRE plantings, in accordance with the RPMM Plan in the FCR. The monitoring activities were performed by Michael Long and Gregg Rabasco of Arcadis (on GE's behalf). The monitoring event was also attended by Izabela Zapisek of Avatar Environmental, Inc. (on EPA's behalf) and Robin McEwan of Stantec and Thomas Potter of the Massachusetts Department of Environmental Protection (on behalf of the Trustees). An arborist from the Haupt Tree Company, Inc. (Haupt) was also present to support the vegetation inspections, and a report provided by the arborist from the inspection is provided in Attachment A. The completed NRRE inspection checklist, with attached forms and tables, is provided in Attachment B. The inspection activities and results are summarized below, along with proposed follow-up actions. The items requiring response and the proposed follow-up actions are also summarized in Table 1.

### ***Shrub-Scrub Island Cap Inspection***

In accordance with the RPMM Plan in the FCR, the summer 2018 inspection of the shrub-scrub island cap was performed in conjunction with the non-NRRE inspection of the shoreline armor system. The inspection of the shrub-scrub island cap consisted of visual observations to identify any areas where the cap may be eroding (e.g., in areas along the edge of water that do not have armor stone) or experiencing any other conditions that could jeopardize the performance of the cap.<sup>2</sup>

The results of the summer inspection of the shrub-scrub island cap are presented in the inspection checklist in Attachment B. As indicated in that checklist, there were no areas within the scrub-shrub island cap observed to have significant erosion or other conditions that could jeopardize the performance of the cap.

The second semi-annual inspection of the shrub-scrub island cap constituted the final monitoring event required by the 5-year program outlined in the RPMM Plan in the FCR. Over the past five years of monitoring, the shrub-scrub island cap has generally met the Performance Standards without indication of erosion or other conditions that could jeopardize the performance of the cap. As such, GE proposes to terminate the shrub-scrub island cap inspection program. However, GE will inspect the shrub-scrub island cap in conjunction with the non-NRRE inspection of the shoreline armor system after severe storms (as defined in the Post-Removal Site Control Plan in the FCR), if any, and if an excessive wind event occurs, as determined in consultation with EPA.

### ***NRRE Vegetation Monitoring***

In accordance with the RPMM Plan in the FCR, the summer 2018 monitoring of the NRRE vegetation consisted of both a qualitative field inspection of the NRRE areas where plantings were installed, and a quantitative assessment (i.e., stem counts) of the plantings within the specific monitoring plots established within the NRRE areas. Personnel conducting the inspection were supported by a representative from Haupt as the certified arborist. Selected photographs of the vegetation in the NRRE areas are provided in Attachment C.

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<sup>2</sup> On the day of the inspection (August 29, 2018), the mean flow in the Housatonic River was approximately 42.9 cubic feet per second (cfs), as measured at the U.S. Geological Survey (USGS) river gage in Coltsville. Following completion of the prior inspection of these areas on May 15, 2017, multiple high-flow events (i.e., estimated flow greater than 440 cfs at the Coltsville gage) were observed, including: August 18, 2018 (daily mean 789 cfs) and August 19 (daily mean 483 cfs).



### Qualitative Assessment

For the qualitative assessment, field personnel conducted a meander survey of the overall NRRE planting areas (shown on Figure 1) to observe overall conditions of the vegetation within those areas. During this qualitative assessment, as indicated in the checklist in Attachment B, no areas were noted with indications of significant damage from trespassing or herbivory.

For the planted trees and shrubs, the qualitative assessment indicated that the majority of the plantings appeared healthy. However, as indicated in the checklist in Attachment B, the arborist recommended that the large red oak and maple trees planted along the eastern bank of Silver Lake in the I9-9-35 monitoring area, while healthy, would benefit from additional fertilization. The general location of these trees is shown as Area 5 on Figure 1.

In addition, qualitative observations were made of the areas around the periphery of the shrub-scrub island where topsoil and an herbaceous wetland species seed mix had been placed in the void spaces of the armor stone. These observations indicated that the topsoil placed in those void spaces remained in place and was stable, and that the herbaceous vegetation planted in that topsoil was generally well established. During the qualitative assessment the vegetation on the shrub-scrub island was re-evaluated. The obligate wetland plants (i.e., buttonbush) on the shrub-scrub island were observed to be much healthier than in previous years (Photos 1 and 2 in Attachment C). Some stunted growth of the buttonbushes was observed, likely due to historic period(s) of stress. The red-osier dogwood specimens were again observed to be growing healthily, and overall the shrub canopy on the shrub-scrub island was observed to be dense and healthy. Thus, GE maintains that no replanting or maintenance is considered necessary at this time.

During the summer 2018 inspection, the status of the shrubs along portions of the northern shoreline, where herbivory was observed in spring 2017, was evaluated. No herbivory was observed during the summer 2018 NRRE inspection.

The presence of invasive species, as listed in Attachment D (or any others listed by the Massachusetts Invasive Plant Advisory Group [MIPAG] as “invasive,” “likely invasive,” or “potentially invasive”), was noted in some of the NRRE areas. Invasive species observed in the summer 2018 inspection are listed on the checklist included as Attachment B. Percent coverage by invasive species within the designated monitoring plots and monitoring areas is described further under the quantitative assessment below.

Finally, at the request of the Trustees, as during the last four monitoring events focused on vegetation, specific observation was made during the summer 2018 inspection to assess the percent cover of non-planted species (e.g., Virginia creeper, raspberry), although these non-planted species are not on the MIPAG list of invasive species. During this monitoring event, the presence of non-planted species was observed, but not in a significant quantity. However, at the request of the Trustees, GE agreed to include the non-planted species in the ongoing general invasive species program and to remove those species if observed to be hindering development of planted vegetation. These plants were removed in connection with GE’s ongoing invasive species control program for NRRE areas (see Attachment A for details).

### Quantitative Assessment

The quantitative assessment was conducted within designated monitoring plots established within four monitoring areas in the overall NRRE area. The four monitoring areas consist of three areas that are approximately co-extensive with the three tax parcels that comprise the NRRE areas (i.e., Parcels I9-10-9, I9-9-36, and I9-9-35) plus the shrub-scrub island. Within each monitoring area, monitoring plots were established based on the size and types of plantings in each area. These plots were described in the RPMM Plan as follows:

- Parcel I9-10-9 Area – two monitoring plots, each approximately 60 feet long, bounded by Fourth Street on the northwest and the lake on the southeast, with one plot including the row of four trees on the furthest northeastern side of the parcel;



- Parcel I9-9-35 Area (excluding the overlap with the shrub-scrub island area) – four monitoring plots, each approximately 60 feet long, in the area between the lake and Silver Lake Boulevard;
- Parcel I9-9-36 Area (excluding the overlap with the shrub-scrub island area) – four monitoring plots, each approximately 60 feet long, bounded by Silver Lake Boulevard on the north and the lake on the south; and
- Shrub-Scrub Island Area – two monitoring plots, each approximately 500 square feet, one on each peninsula.

The locations of the monitoring plots are shown on Figure 1. The actual boundaries of the monitoring plots were re-established by survey in the field prior to the summer 2018 inspection. Within each designated monitoring plot, field personnel: (1) performed a stem count of planted trees and shrubs to identify live and dead plantings (as well as any stressed plantings); (2) estimated the areal extent of groundcover by native herbaceous species; and (3) determined the presence of, and estimated percent coverage by, invasive species, as listed in Attachment D (or any others listed by the MIPAG as “invasive,” “likely invasive,” or “potentially invasive”), or other non-planted species potentially hindering the development of planted vegetation.

In accordance with the RPMM Plan in the FCR, the numbers of live trees and shrubs counted in each monitoring plot were compared to the baseline numbers of trees and shrubs listed in Table 7-2 of the FCR to determine percent survival. However, as directed in the Trustees’ March 1, 2016 comment letter, given the purpose of the quantitative assessment to assess the survival of planted trees and shrubs, no percent survival results are given as greater than 100% despite some monitoring plants having more trees and shrubs than originally planted. The survival results from this quantitative assessment of the individual monitoring plots within each monitoring area were then averaged to estimate the percent survival of trees and shrubs (as applicable) in that monitoring area. Similarly, the percent coverage by native herbaceous species and percent coverage by invasive species in the monitoring plots were averaged to determine the areal coverage by native herbaceous species and percent coverage by invasive species for each of the four monitoring areas. The results for each monitoring area were then compared to the Performance Standards specified in the SOW and summarized in the RPMM Plan – namely, 80% survival for the planted trees and shrubs, 100% cover by native herbaceous species (outside the foliar coverage of the trees), and no greater than 5% cover by invasive species.

The results of the quantitative NRRE vegetation monitoring event are presented on the Form B-1s and summarized in Tables B-1 and B-2 in Attachment B. As indicated on those forms, no dead or missing trees were observed in any of the monitoring plots where trees had been planted, and in some cases the summer 2018 count indicated greater numbers of trees than the baseline numbers. As shown on the Form B-1s, there was a shortage of a total of 47 individual shrubs compared to the baseline numbers; however, in several cases, the summer 2018 counts indicated greater numbers of specific shrub species than the baseline numbers. As a result, when looking at the overall number of shrubs in each monitoring plot without regard to species, there was a shortage of 40 shrubs, and one monitoring plot indicated an overall increase in shrubs. Finally, as noted on the Form B-1s, for many monitoring plots the dense cover of shrubs made identification of individual plants difficult, and some shrubs may have been missed in the counts.

The total quantities of live trees and shrubs observed in each monitoring plot and monitoring area during the summer 2018 monitoring event are summarized in Table B-2. As shown in Table B-2, when these quantities are compared to the baseline quantities, the average percent survival for the trees and/or shrubs in each monitoring area is well above the applicable Performance Standard of 80% survival. Thus, it was concluded that no replanting is necessary.

During the summer 2018 monitoring event, a total of 1 tree and 11 shrubs in the monitoring plots were observed to be alive but stressed. As indicated on the attached Form B-1s, these were:

- two shrubs (red-osier dogwood, winterberry holly) in the I9-10-9-1 monitoring plot,
- one shrub (winterberry holly) in the I9-10-9-2 monitoring plot,



- two shrubs (choke cherry, black chokeberry) in the I9-9-36-4 monitoring plot,
- one shrub (button bush) in the SSI-1 monitoring plot,
- two shrubs (nannyberry viburnum, black chokeberry) in the I9-9-35-1 monitoring plot, and
- one tree (black willow) and three shrubs (red-osier dogwood, winterberry holly, northern arrowwood) in the I9-9-35-4 monitoring plot.

No replanting is necessary for these trees and shrubs at the present time. These plantings will continue to be monitored for their condition and survival during future NRRE vegetation inspection.

The results of the quantitative assessment of percent cover by native herbaceous species, which are also summarized in Table B-2 in Attachment B, showed that the percent cover by native herbaceous species in all monitoring areas, based on the results from the monitoring plots within them, meet the Performance Standard of 100% (outside the foliar cover of the trees).

With respect to the coverage by invasive species, the results of the quantitative assessment of percent cover by such species showed that, with the exception of the monitoring plot I9-9-36-4, all other monitoring plots had at least one invasive species present. As shown in Attachment B, the invasive species cover in only one individual monitoring plot (SSI-2) exceeded 5%. After averaging the results from the monitoring plots, no monitoring areas had an invasive species cover greater than the Performance Standard of 5%, as shown in Table B-2. Of note, water chestnut was observed in Silver Lake during the summer 2018 inspection (Photo 6 in Attachment C). A large strand of this aggressive aquatic invasive species was observed upgradient in the retention pond hydraulically connected to Silver Lake through the PEDAs Outfall. GE removed the water chestnut from Silver Lake during the September 11 invasive species control event and will monitor this species during future site visits conducted as part of the general invasive species control program.

As noted above, GE is continuing its general invasive species control program in the Silver Lake Area throughout 2018, including a treatment on September 11, 2018 after performance of the summer 2018 inspection, and will also perform another treatment following the first hard frost. This program includes treatment of the invasive species in the monitoring plot with greater than 5% cover, along with other invasive species observed throughout the NRRE areas.

### **Summary of Follow-up Actions**

The items identified during the summer 2018 NRRE inspection as requiring response actions and the proposed follow-up actions are summarized in Table 1.<sup>3</sup> As previously mentioned, some of those actions have already been implemented – namely continuation of the general invasive species control program in this RAA, including removal of the non-planted species that could hinder development of planted vegetation. The remaining identified follow-up actions include maintenance on the large trees along the eastern bank of Silver Lake, re-evaluations of various areas or plantings during the next NRRE inspection, and continuation of the general invasive species control program in the rest of 2018.

Although no NRRE vegetation inspection is scheduled for 2019 under the RPMM Plan, GE plans to qualitatively monitor the NRRE vegetation in 2019. GE will also continue the invasive species control program as needed throughout 2019.

### **Future NRRE Inspections**

Under the requirements of the RPMM Plan, the next assessment of the NRRE vegetation is scheduled to be performed during the 2020 annual NRRE monitoring event in summer 2020 (likely to be performed in

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<sup>3</sup> The RPMM Plan in the FCR provides that GE will implement any corrective actions identified during an NRRE inspection within 90 days of the inspection date or 30 days of the Trustees' approval of the proposal (whichever is later), unless otherwise agreed to by the Trustees. In this case, however, given the need for prompt action, some of the identified follow-up activities (i.e., invasive species control) were conducted prior to that time, as described in the text.

July or August). This future NRRE inspection at the Silver Lake Area will be conducted in accordance with the RPMM Plan in the FCR. A report will be submitted on the monitoring event to the Trustees and will include completed inspection checklists using the forms provided in the FCR, as appropriate.<sup>4</sup>

Please contact me if you have any questions regarding the information presented in this letter.

Sincerely,



Kevin G. Mooney  
Senior Project Manager

Attachments

cc: Dean Tagliaferro, EPA\*  
Christopher Smith, EPA\*  
Tim Conway, EPA (cover letter only)\*  
Chris Ferry, ASRC Primus\*  
Scott Campbell, Avatar\* (plus 2 hard copies)  
Izabella Zapisek, Avatar\*  
Robert Leitch, USACE\*  
Michael Gorski, MDEP\*  
John Ziegler, MDEP\*  
Eva Tor, MDEP (cover letter only)\*  
Nancy E. Harper, MA AG (cover letter only)\*  
Robin McEwan, Stantec\*  
Susan Peterson, CT DEEP\*  
Nate Joyner, Pittsfield Dept. of Community Development\*  
James McGrath, Pittsfield Dept. of Parks and Recreation\*  
Corydon Thurston, Executive Director, PEDAs\*  
Barbara Landau, Noble, Wickersham & Heart\*  
James Gagnon, O'Reilly, Talbot & Okun\*  
Andrew Silfer, GE\*  
Rod McLaren, GE (cover letter only)\*  
Mark Graveling, Todd Cridge, and Lauren Putnam, Arcadis\*  
James Bieke, Sidley Austin LLP  
GE Internal Repositories

*\* electronic copy only*

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<sup>4</sup> The inspections of the non-NRRE components of the remediation at the Silver Lake Area will be performed separately in accordance with the Post-Removal Site Control Plan in the FCR, with separate report(s) submitted to EPA.



TABLE



**Table 1**  
**Summer 2018 NRRE Areas/Items Requiring Response and Follow-Up Actions**

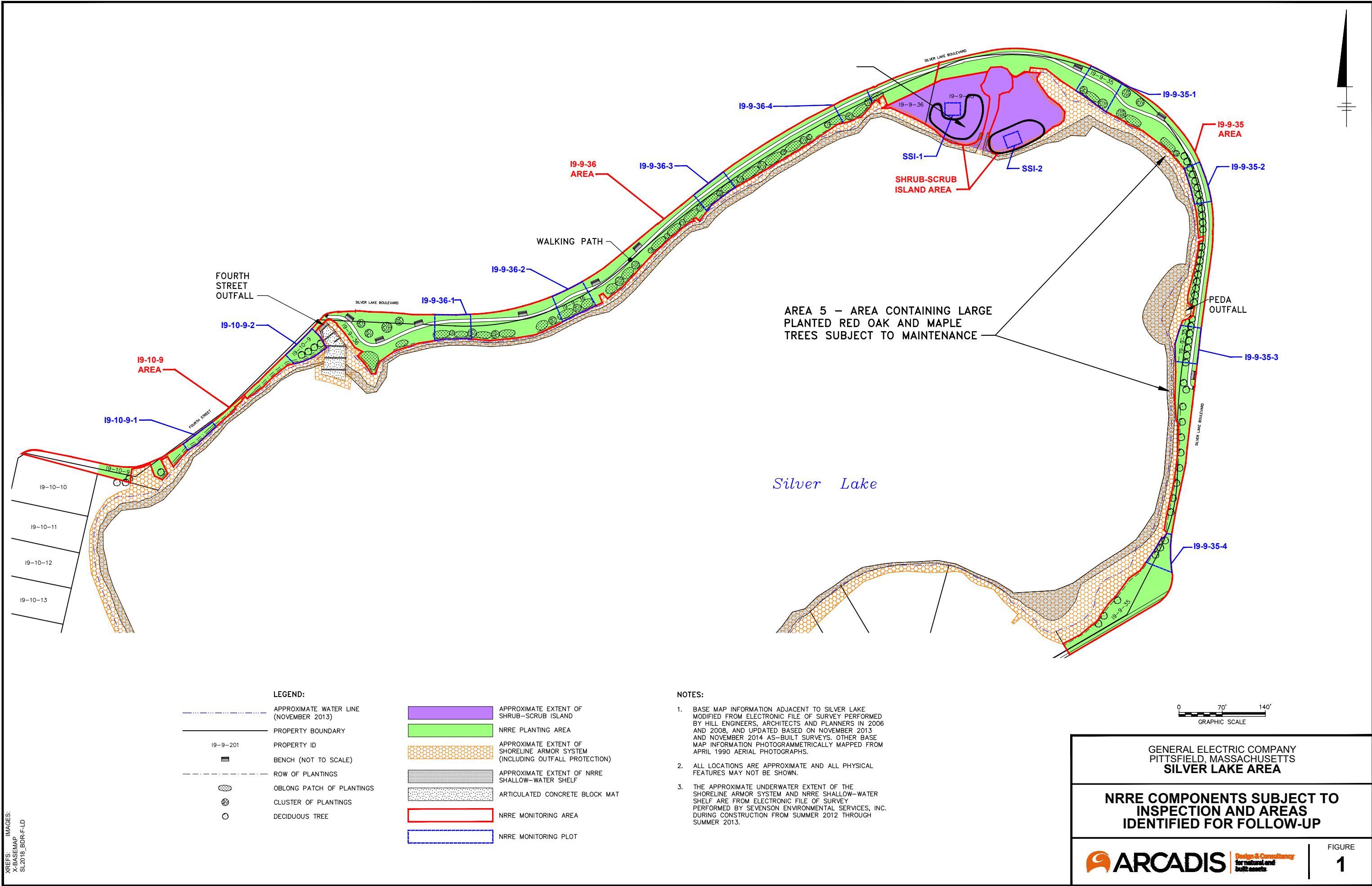
**Silver Lake Area**  
**General Electric Company - Pittsfield, Massachusetts**

No.	Area/Item Identified	Description	Completed Follow-up Action	Future Follow-up Action
1.	Area 5 - Large Red Oak and Maple Trees along Eastern Bank of Silver Lake in the I9-9-35 Monitoring Area	All large trees appeared to be in good health during the summer 2018 inspection. The arborist again recommended that the large red oak and maple trees would benefit from continued maintenance with fertilization.	None	Continue maintenance/fertilization activities in 2019, as necessary.
2.	General - Stressed Tree and Shrubs in Various Monitoring Plots	During the summer 2018 inspection, 11 shrubs and 1 tree within the monitoring plots were observed to be stressed.	None	Quantitatively re-evaluate health of vegetation in monitoring plots during the summer 2020 NRRE monitoring event.
3.	General - Herbivory on Certain Shrubs	Re-evaluated the status of minor herbivory due to beetles on shrubs along the northern shoreline that was observed during the spring 2017 inspection. No herbivory observed.	None	Continue to observe for potential beetle herbivory and implement controls, if recommended by the arborist.
4.	General - Invasive Species and Non-Planted Species	During the summer 2018 inspection invasive species control was observed to generally be effective, and only minimal presence of non-planted species (e.g., Virginia creeper, raspberry, bindweed) was observed.	Continued the general invasive species control program, including removal of non-planted species hindering the development of planted vegetation, with treatments as shown in Attachment A.	Continue the general invasive species control program through the first frost of 2018, including removal of non-planted species that are observed to be hindering development of planted vegetation. Continuing the invasive species control program in 2019, as needed.



**FIGURE**







ATTACHMENT A



The Haupt Tree Company, Inc.  
Arborists  
Box 156  
Sheffield, MA 01257  
(413) 229-8565  
1-800-874-8733  
A Multiple Service  
Arboricultural Firm  
haupttree.com



## 6/11/18 SILVER LAKE INVASIVE WEED 2<sup>ND</sup> TREATMENT

RODEO applied at 6.5oz/g with backpack sprayer

Signs of last treatment present throughout. One large patch of Mugwort found growing adjacent to patch of Japanese Knotweed on east side of lake. Yellow iris seedlings present all around water's edge. Yellow iris plants hand removed. 3 large Russian olive plants growing in field area on south side of lake.

SEE ATTACHED MAP AND PHOTOS



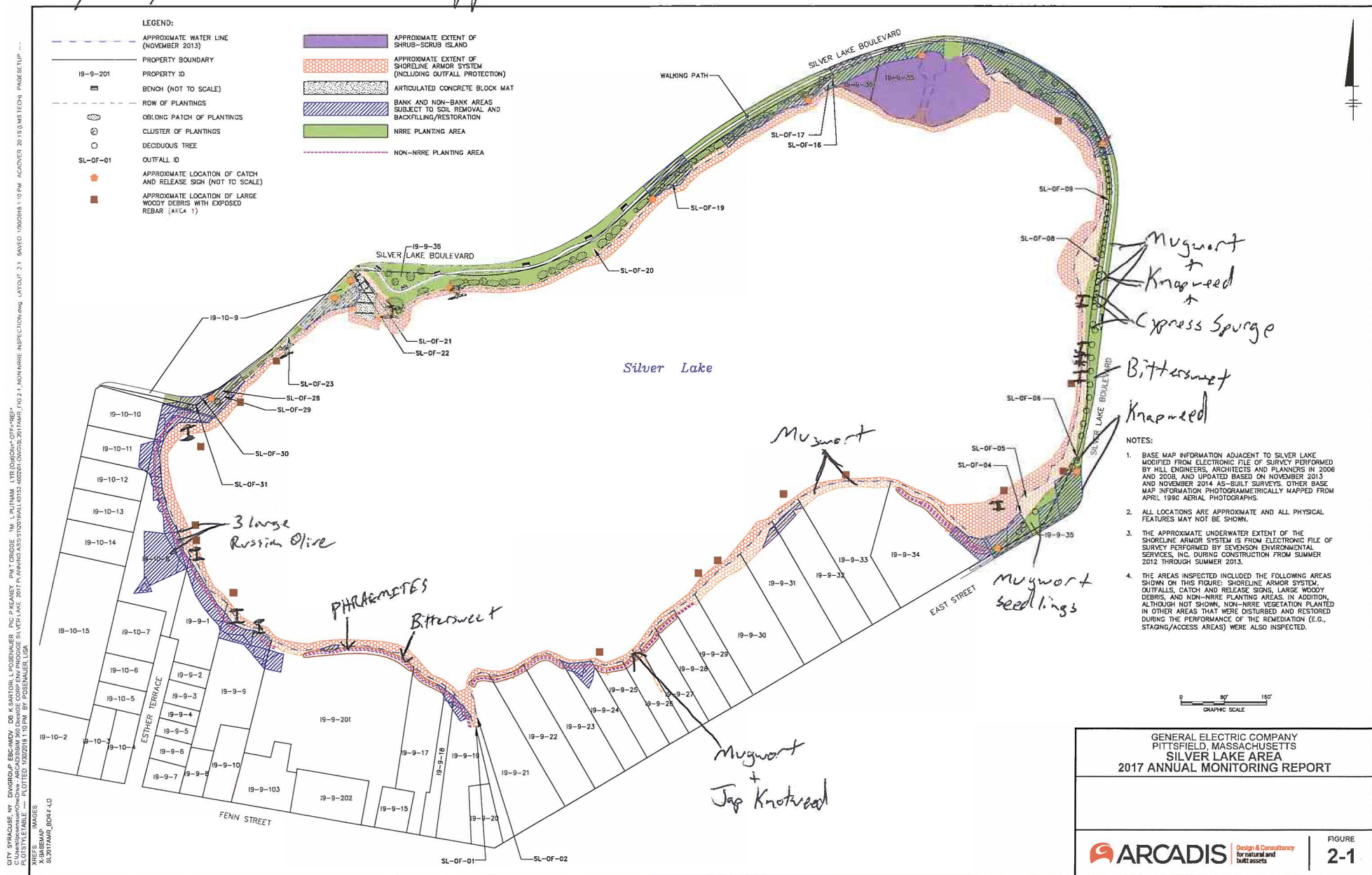
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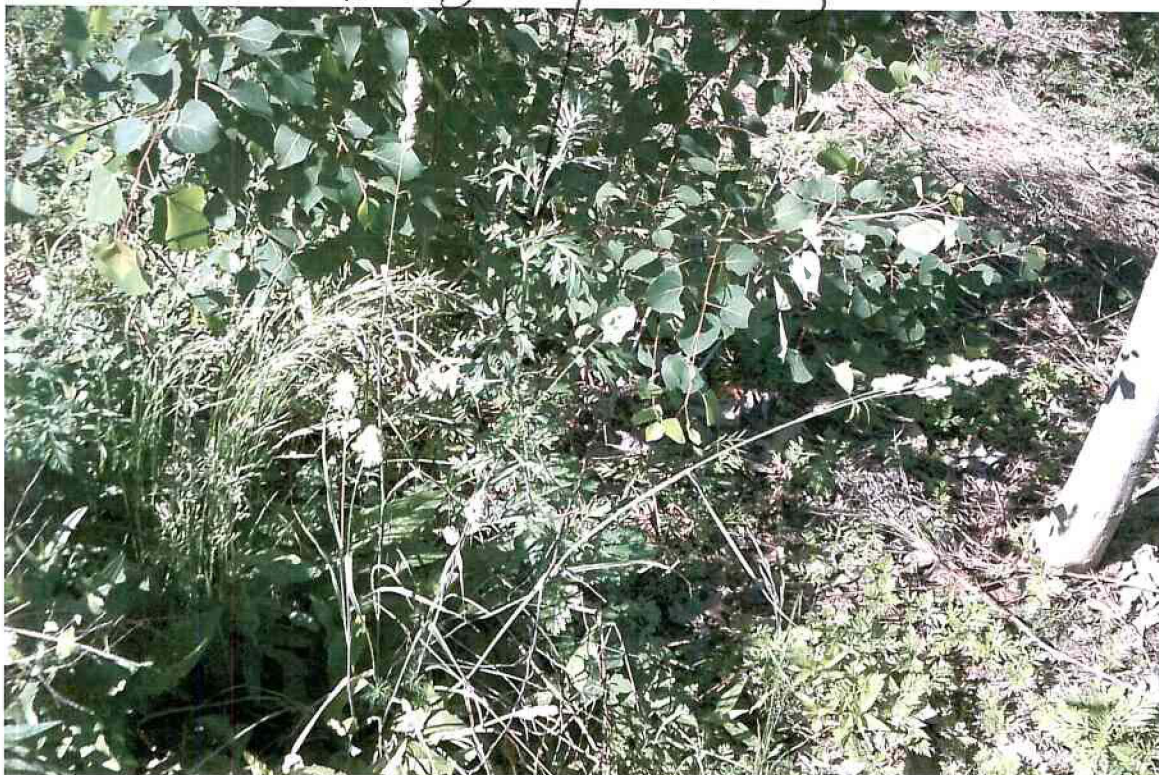


6/11/18 2nd Application





Mugwort, Seedling



REMOVED





Spotted Knapweed Seedling



REMOVED!!!





Cypress Spurge



Yellow Iris





Yellow Iris REMOVED!!!



PHRAGMITES,





Blurry Plant Matter



MUGWORT

Japanese Knotweed



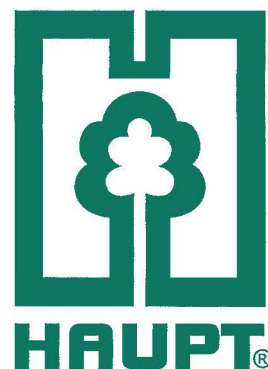


Japanese Knotweed Patch treated last  
Apr.



**The Haupt Tree Company, Inc.**

Arborists  
Box 156  
Sheffield, MA 01257  
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Arboricultural Firm  
haupttree.com



6/29/18 ARCADIS SILVER LAKE SITE 3<sup>RD</sup> TREATMENT

RODEO MIXED @ 6.5OZ/G APPLIED WITH BACKPACK SPRAYER

Evidence of past treatments throughout entire area. Yellow iris seedlings that were hand removed 1<sup>st</sup> and 2<sup>nd</sup> treatment but roots remained, treated with herbicide on this date. Mugwort and spotted knapweed seedlings accumulations near planted row of trees, treated on this date. Purple Loosestrife plants identified on this date, some hand removed some treated, the rest will be treated next application.

SEE MAP AND PHOTOS



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MUGWORT SEEDLINGS



Spotted Knapweed Seedlings







Spotted Knapweed Seedling





Knapweed "KNOT"



Knapweed Seedling





Mugwort seedling



MUGWORT seedling





Cypress Spurge  
~~Colt's Foot~~      Close by  
Knapweed      Mugwort



Yellow Iris      Colt's Foot





# PHRAGMITES





# PHRAG "KNOTS"

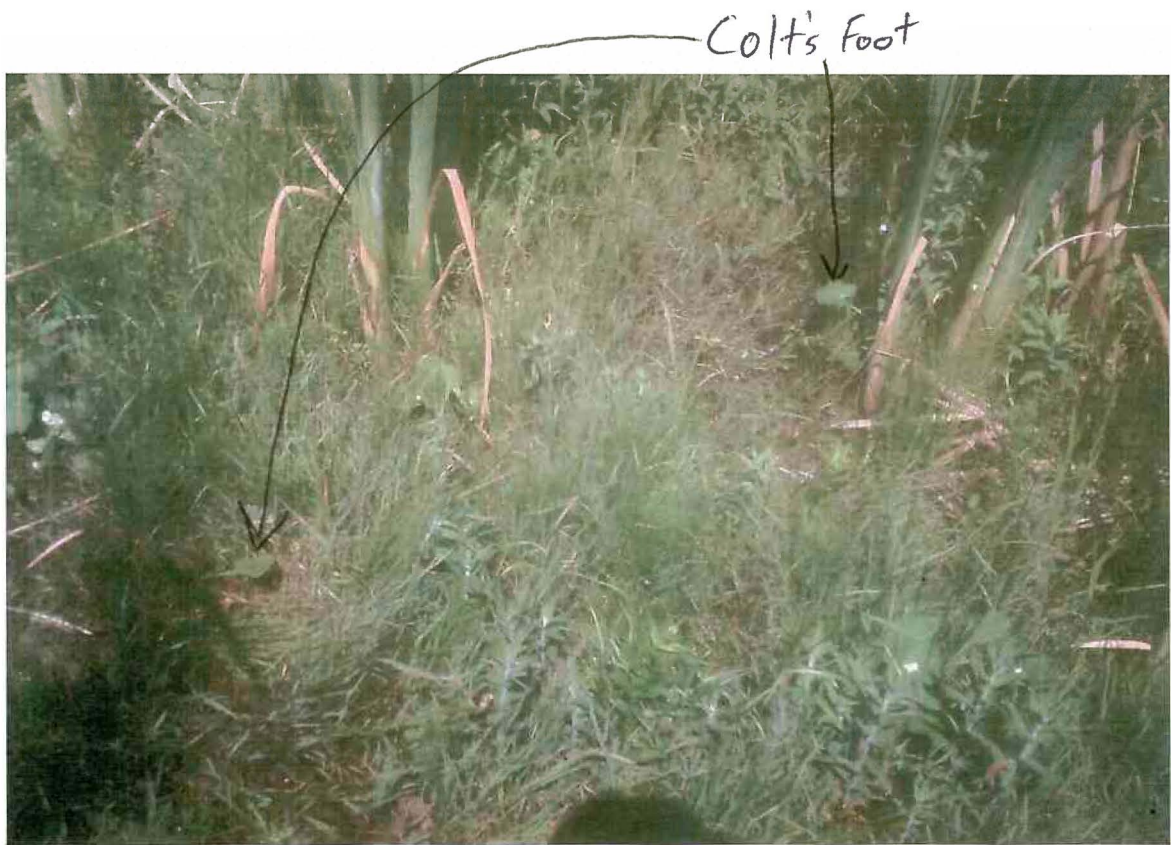




PHRAGMITES on SSI







Mugwort seedlings



Cypress Spurge



Yellow Iris



Cypress Spurge





Spotted Knapweed



Yellow Iris





PURPLE LOOSESTRIFE !!!



DEAD JAPANESE KNOTWEED



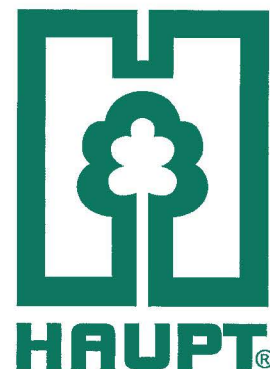


PURPLE LOOSESTRIPE REMOVED





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7/16/18 SILVER LAKE INVASIVE WEED CONTROL

RODEO MIXED @ 6.5OZ/GAL APPLIED WITH BACKPACK SPRAYER

Signs of past treatments present throughout entire area. Purple Loosestrife plants present in patches around entire perimeter of lake close to the edge of water. Some of these plants are flowering but most not in bloom yet. Mugwort seedlings are rapidly growing at this time, making them easier to spot in taller areas. Yellow iris plants treated with herbicide for second consecutive application. A few colts foot plants treated growing under bushes in various spots.

SEE ATTACHED MAP AND PHOTOS

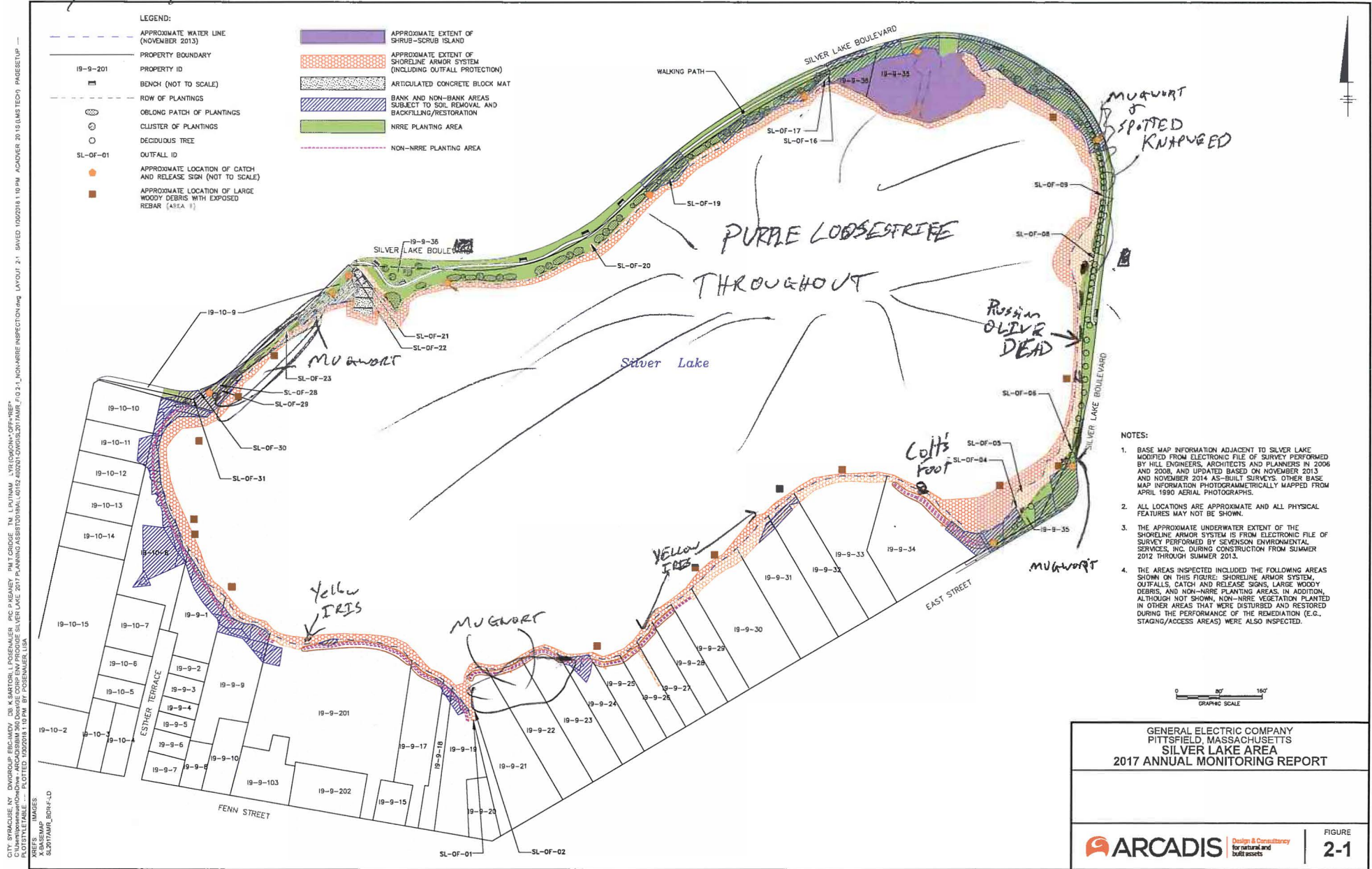


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# 7/16/18 Silver Lake Invasive Treatment





MUGWORT seedlings



PURPLE LOOSESTRIFE





RUSSIAN OLIVE still trying to live



Yellow Iris treated last year & now





Purple Loosestrife & Colt's Foot



Mugwort and spotted knapweed





Purple Loosestrife



Dead Phragmites





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Arboricultural Firm  
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**8/2/18 ARCADIS SILVER LAKE 5TH INVASIVE WEED CONTROL TREATMENT**

**RODEO MIXED @6.5OZ/G APPLIED WITH BACKPACK SPRAYER**

Control measures implemented throughout the entire perimeter of lake appear to effecting some control. Mugwort seedlings are actively growing in most areas where mugwort has been found growing in the past and they have been treated. Phragmites patch found near SSI treated.

Colts foot, yellow iris, purple loosestrife, bittersweet, russian olive, tatarian honeysuckle, phragmites, and cypress spurge are showing signs of overall control. Meaning these species are not as prevalent as years past. New seedling will always be present; however, evidence of prior work is noticeable. If plants encountered have been treated in past; and showing signs of control, we have not been treating them. If recently sprouted plants are encountered, they are treated as appropriate.

The strip of plant material growing between Silver Lake Blvd and the sidewalk has not been mowed in what I would estimate a month. This has allowed mugwort and spotted knapweed that has been mowed multiple times to grow up. With such large root stock, these plants have grown very large very rapidly. Much time was spent hand removing large plants in this entire western and northern edge of lake, in order to avoid the spreading of seeds.

Water chestnut plants found invading Silver Lake through large drain pipe from adjacent pond across Silver Lake Blvd.

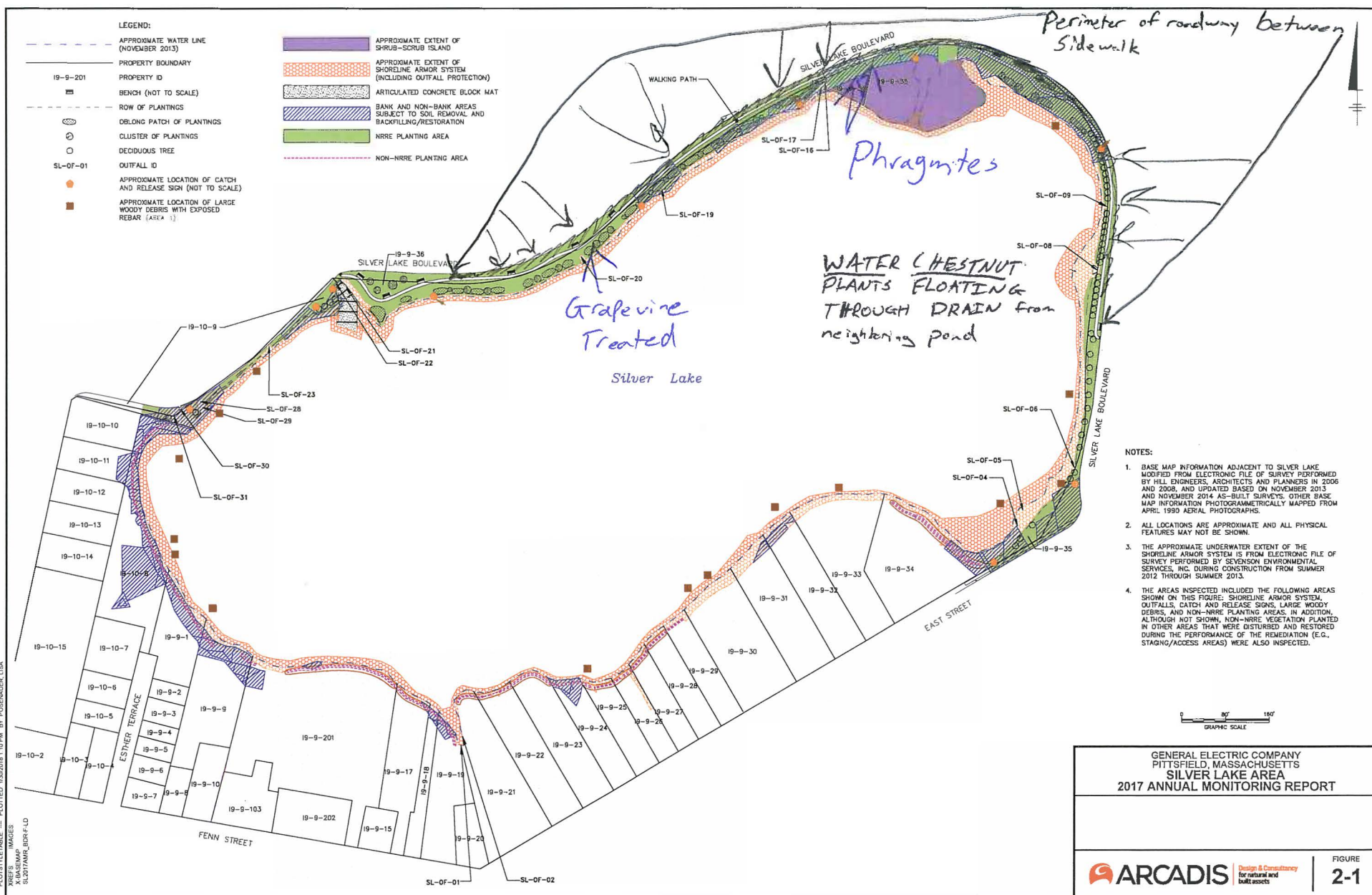
SEE MAP AND PHOTOS



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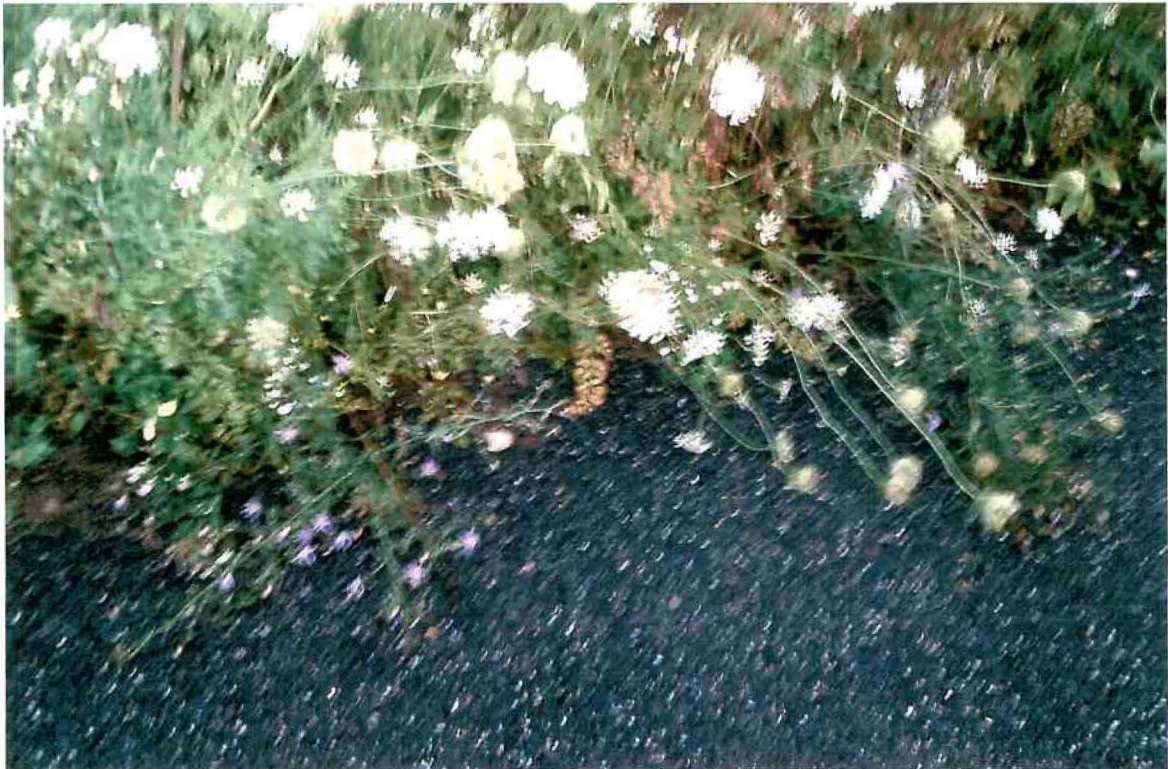




Mugwort



Spotted knapweed





Spotted knapweed patch



adjacent ⇕



Cypress spurge ↗



Water chestnuts invading



Spotted  
Knapweed

Mugwort





Mugwort



NOT MOWED





Spotted knapweed

Large taproot  
removed



Grapevine severed and removed from Dogwood





Sidewalk



Large Spotted Knapweed root Large





Water Chestnut



Purple Loosestrife





Phragmite



Phragmite patch





Purple Loosestrife



Purple Loosestrife





Cypress Spurge



Water Chestnut





**The Haupt Tree Company, Inc.**

Arborists  
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Sheffield, MA 01257  
(413) 229-8565  
1-800-874-8733  
A Multiple Service  
Arboricultural Firm  
haupttree.com



**8/16/18 SILVER LAKE 6<sup>TH</sup> INVASIVE TREATMENT**

**RODEO MIXED @6.5OZ/G APPLIED WITH BACKPACK SPRAYER**

Treatment of invasive weed species identified; Russian olive, yellow iris, spotted knapweed, cypress spurge, colt's foot, mugwort, phragmites, and purple loosestrife completed. Large Canada thistle plant cut and removed from east side. Large concentration of mugwort treated SW corner of lake. Phragmites patch hand pulled out of water on north side of lake. This is second year this patch has been manually removed. Further attention to this small phragmite patch will yield control in future. Purple Loosestrife plants deflowered and treated especially in SSI areas.

SEE MAP AND PHOTOS

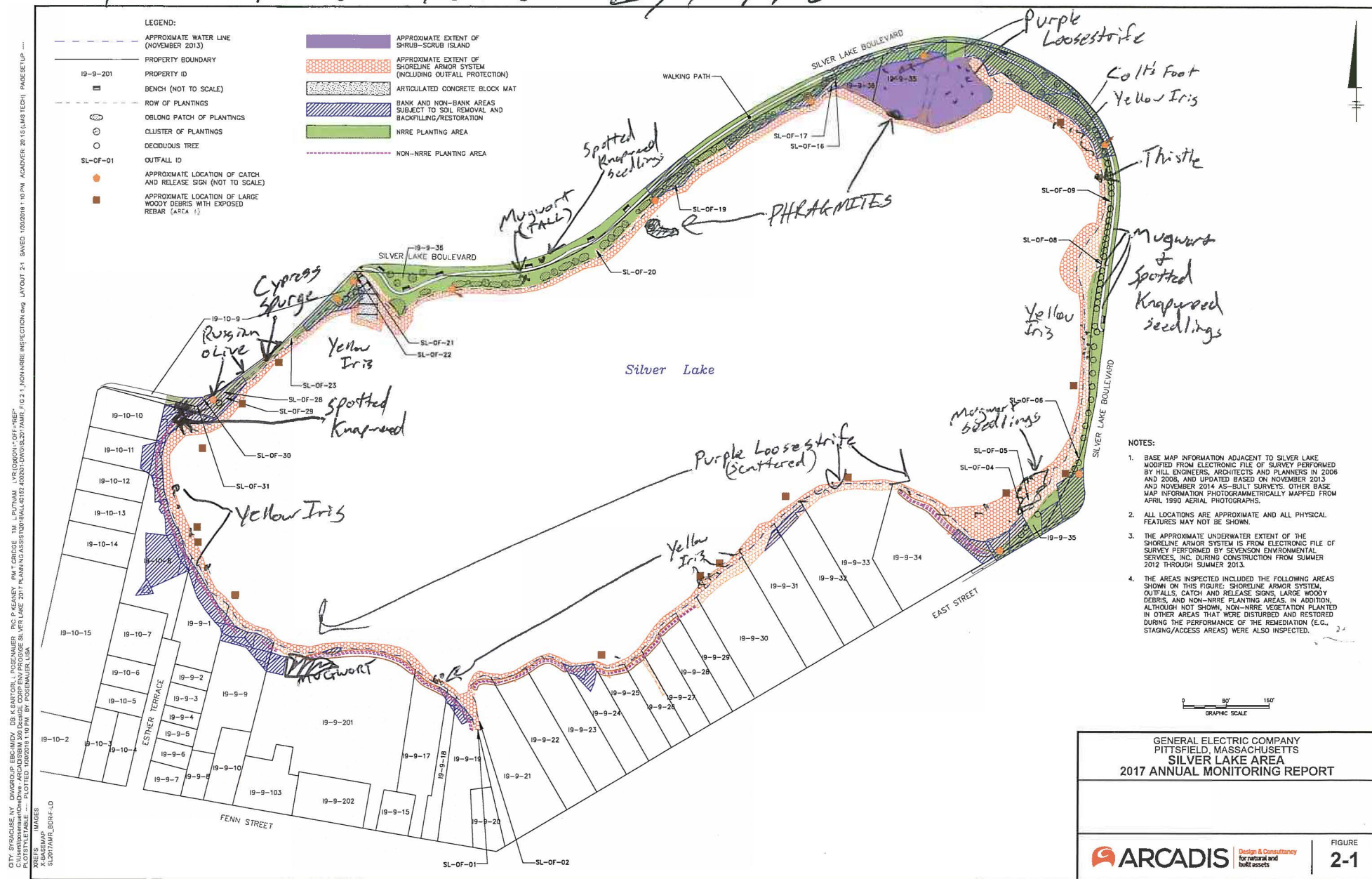


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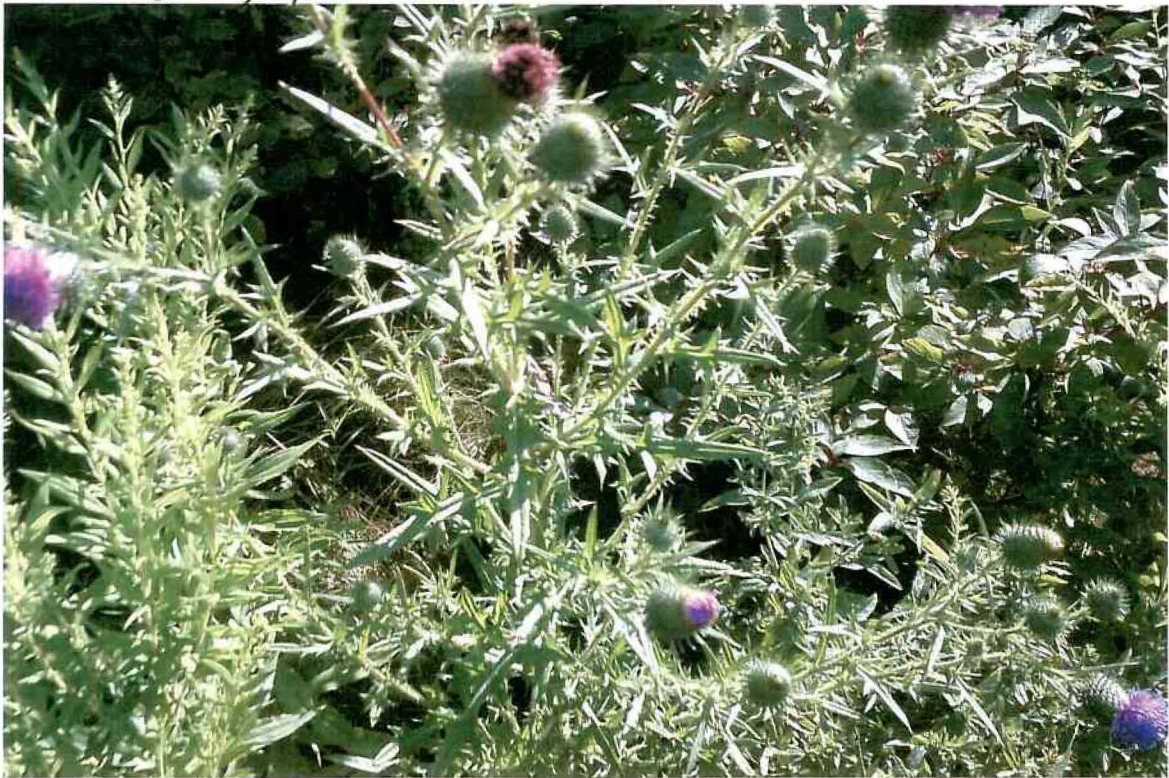


# Silver Lake 6<sup>th</sup> treatment 8/15/18





Canada  
Large Thistle



Purple Loosestrife





Yellow Iris



PHRAGS Treated 5<sup>th</sup> treatment (DEAD)





Phragmites



PHRAG Patch in water





Removed



Mugwort





Spotted Knapweed Seedlings



Cypress Spurge





Russian Olive (stump growth treated)



Mugwort Seedling





Mugwort + Spotted Knapweed



Purple Loosestrife





Mugwort seedlings



Mugwort Patch (SW)





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8/28/18 ARCADIS SILVER LAKE 7<sup>TH</sup> TREATMENT

RODEO MIXED @ 6.5OZ/GAL APPLIED WITH BACKPACK SPRAYER

Mugwort seedlings present around entire perimeter of lake. Large concentration of mugwort treated SW corner of lake. Purple loosestrife and yellow iris very loosely scattered around entire perimeter of lake. Spotted knapweed seedlings located mainly along sidewalk on NE end. Phragmites found growing in water on SE corner and in center of north side. Japanese knotweed plants treated in same two locations as past; behind old fast food chicken and nearby. Grapevines removed from dogwood plants behind Mazda dealer. Two Russian olive plants treated.

SEE MAP AND PHOTOS.

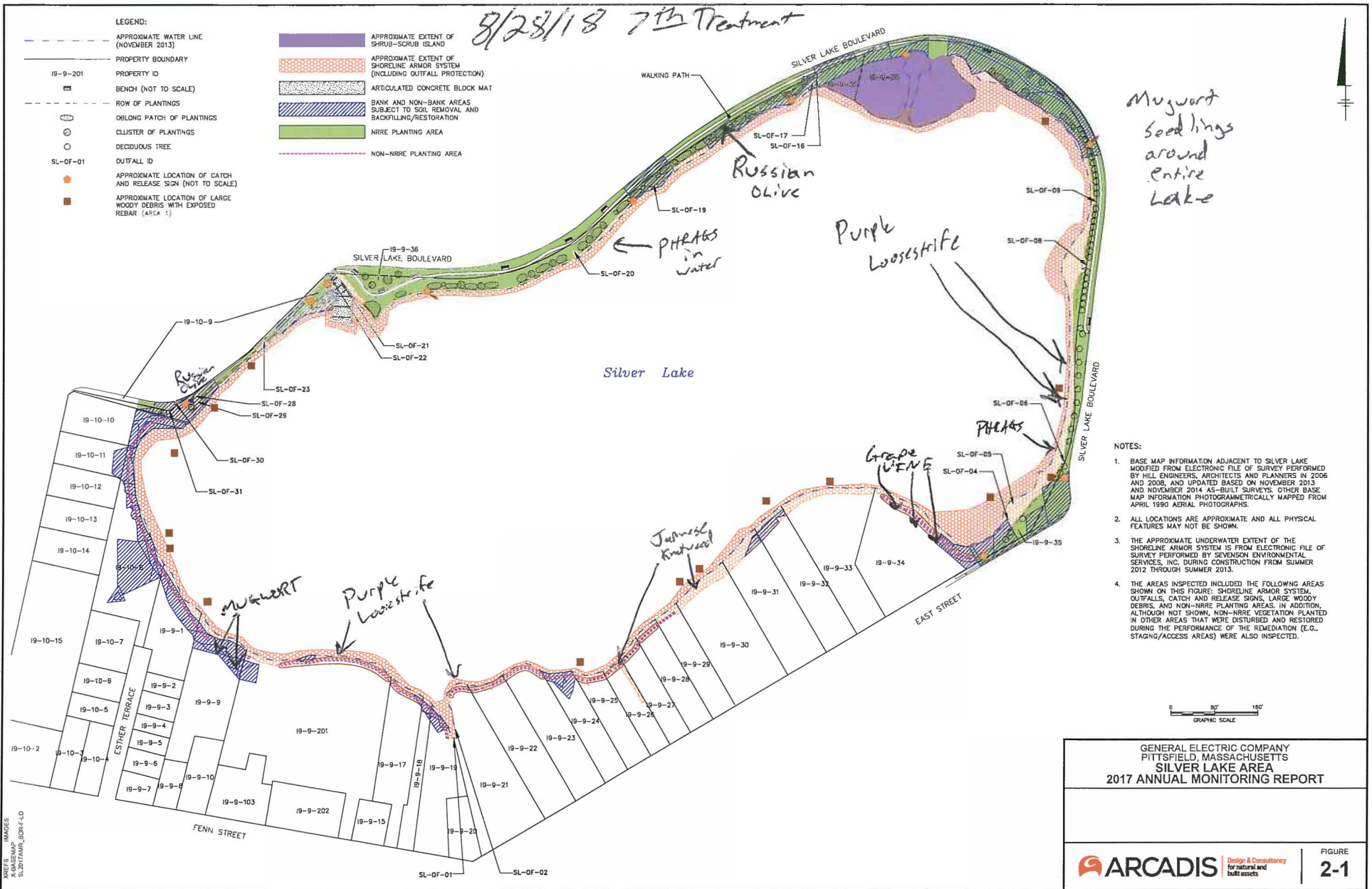


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CITY OF PITTSFIELD, MASSACHUSETTS  
 DIVISION OF PLANNING AND DEVELOPMENT  
 100 STATE STREET, 10TH FLOOR  
 PITTSFIELD, MA 01201  
 413.734.2000  
 WWW.PITTSFIELDMA.GOV  
 8/28/18 7:15 PM  
 100 STATE STREET, 10TH FLOOR  
 PITTSFIELD, MA 01201  
 413.734.2000  
 WWW.PITTSFIELDMA.GOV





Japanese Knotweed



Virginia Creeper & Grapevine Removed from plants





Grape Vine



Mugwort Seedlings





Spotted Knapweed



Grapevine





Purple Loosestrife





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8/29/2018 ANNUAL SITE INSPECTION

Annual site inspection complete. Overall control of all invasive weed species. Planted oak and maple trees alongside Silver Lake Blvd are showing signs of overall improvement. Continue fertilization program recommended in future. Common buttonbush plants growing in shrub-scrub island showing signs of slight improvement from years past.



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9/11/18 ARCADIS SILVER LAKE 8<sup>TH</sup> TREATMENT WRITE UP

RODEO MIXED @6.5OZ/GAL APPLIED WITH BACKPACK SPRAYER

Water Chestnut plants removed from water along eastern shoreline. Phragmites found in water alongside water chestnut in northeast corner. Purple Loosestrife growing in scattered locations around lake perimeter deflowered. Russian olive, black locust, and buckthorn plants cut to ground level along north shore. Bittersweet cut to ground level. Mugwort seedlings scattered around entire perimeter. Two colt's foot plants treated northeast corner.

SEE MAP AND PHOTOS

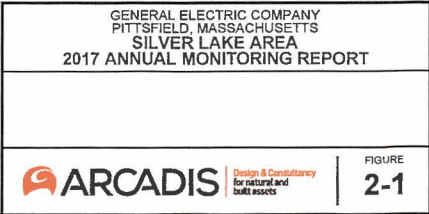


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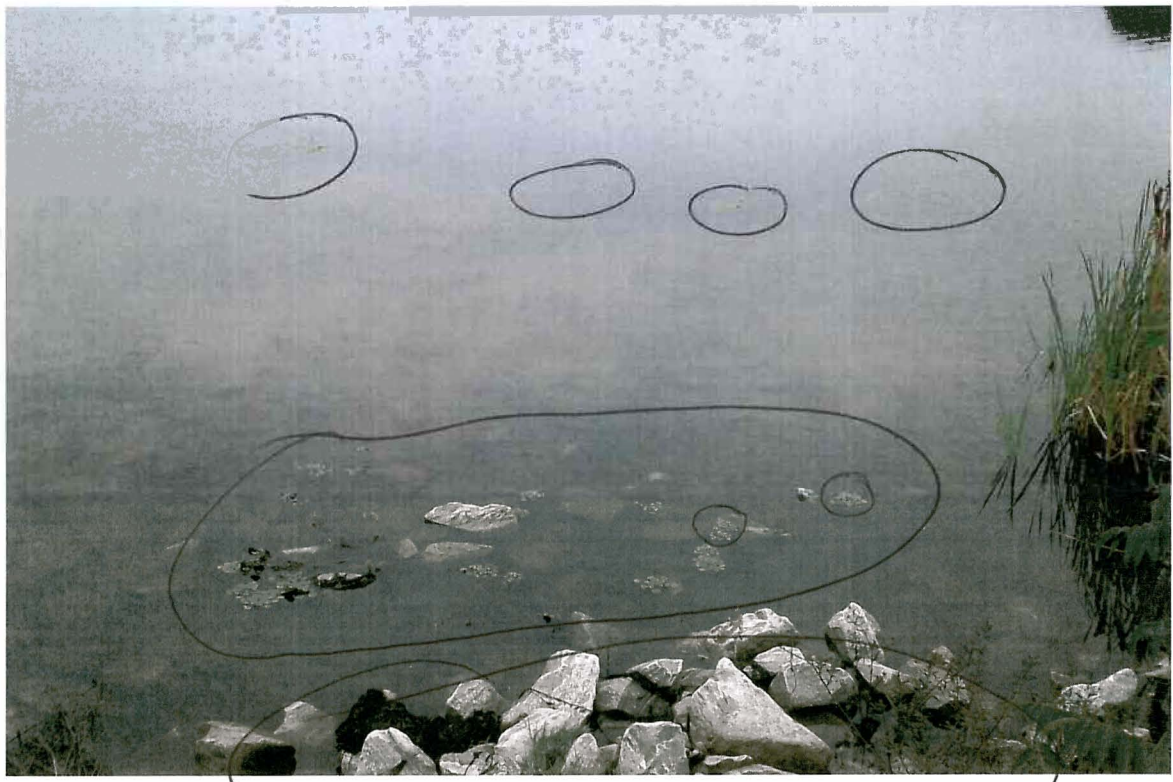








Water Chestnut



Front of Drainage Pipe



Water Chestnut Removed



Water chestnut





Water Chestnut



Water Chestnut





# ATTACHMENT B



**ATTACHMENT B-1**  
**CHECKLIST FOR INSPECTION OF NATURAL RESOURCE RESTORATION/ENHANCEMENT MEASURES**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

**I. GENERAL INFORMATION**

Inspection Date: 29-Aug-18  
 Conducted By/Phone Number: Mike Long, Gregg Rabasco  
 Weather Conditions: Clear, sunny, 80-90 degrees Fahrenheit  
 Date of Last Inspection: 5/15/2018 (shrub-scrub cap), 9/6/2017 (qualitative vegetation), 9/9/2016 (quantitative vegetation)

**II. INSPECTION SUMMARY**

**1. Vegetation - Qualitative Meander Survey**

**A. Restored Trees and Shrubs** *(Note any physical changes since last inspection; note condition of trees and shrubs planted during restoration activities; note general condition of any tree guards, tree cages, and/or tree stakes, if present; note any evidence of damage from trespassing or herbivory.)*

- Majority of plantings looked healthy; no significant difference from quantitative monitoring conducted in summer 2016.
- All large trees appeared to be in good health. The arborist recommended that the large red oak and maple trees planted along the eastern bank of Silver Lake in the I9-9-35 monitoring area would benefit from additional maintenance (fertilization).
- In the area where black willows were observed to be stressed, dead, or missing on the eastern bank, naturally recruited native trees continue to colonize along the slope.
- The buttonbush on the shrub-scrub island show signs of historic stress (i.e. stunted growth), however they were observed to be in good condition during the summer 2018 inspection. Red-osier dogwoods continue to thrive on the scrub-shrub islands.
- No herbivory was observed on shrubs on the northern shore (previously noted as potentially due to viburnum leaf beetle).
- A total of 11 stressed shrubs and 1 stressed tree were noted during summer 2018 monitoring of NRRE plots (see attached forms).

**B. Herbaceous Vegetation** *(Note evidence of areas of bare/sparse vegetation; note any damage from trespassing or herbivory; note any physical changes since last inspection. Also note the presence and condition of the topsoil placed in the void spaces of the armor stone around the periphery of the shrub-scrub island above the water surface elevation and the condition and growth of the vegetation planted in that topsoil.)*

- There was no evidence of significant damage from trespassing or herbivory.
- Herbaceous vegetation was generally observed to be covering well and in good health.
- Vegetative cover was generally well established. The seed mix applied in 2017 is well established in areas where sparse vegetation observed in May 2016.
- Topsoil and herbaceous vegetation placed in the void spaces of the armor stone around the periphery of the shrub-scrub island were generally well established and stable.

**C. Presence of Invasive Species** *(Note the species present including the following: Amur honeysuckle, Autumn olive, Black locust, Black swallow-wort, Coltsfoot, Common barberry, Common buckthorn, Cypress spurge, Garlic mustard, Glossy buckthorn, Goutweed or Bishop's weed, Japanese barberry, Japanese honeysuckle, Japanese knotweed, Morrow's honeysuckle, Morrow's X Tatarian honeysuckle [hybrid], Multiflora rose, Norway maple, Oriental bittersweet, Phragmites (common reed), Porcelain berry, Purple loosestrife, Russian olive, Spotted knapweed, Tatarian honeysuckle, Yellow iris, or any other plant species listed by the Massachusetts Invasive Plant Advisory Group as "Invasive," "Likely Invasive," or "Potentially Invasive".)*

- Invasive species were observed within the NRRE areas in small concentrations. Observed invasive species included purple loosestrife, hedge bindweed, oriental bittersweet, phragmites (common reed), Russian olive, Canada thistle, coltsfoot and common buckthorn.
- Invasive species percent coverage within the specified monitoring plots and areas was observed to generally be less than 5% cover.
- Water chestnut (*Trapa natans*) was observed in Silver Lake during the 2018 summer inspection. In the detention basin to the east, which is upgradient of and hydraulically connected to (through the PEDA Outfall) Silver Lake, there is a large stand of this aggressive aquatic invasive species.

**2. Vegetation - Quantitative Monitoring** *(Complete the attached field form [Form B-1] for each monitoring plot and then complete the attached summary tables [Tables B-1 and B-2].)*

**3. Shrub-Scrub Island Cap** *(Note any areas of the shrub-scrub island cap where the cap may be eroding [e.g., in areas along the edge of water that do not have armor stone] and any other conditions that could jeopardize the performance of the cap.)*

- No areas of erosion or other conditions that could jeopardize the performance of the cap were observed.

**4. Other Observations** *(Confirm that repair/maintenance activities identified during prior inspection, if any, have been performed; note any other general observations, including parcel-specific restoration activities.)*

- Invasive species control efforts appear to have been implemented in accordance with recommendations made during the spring 2018 inspection.
- Minimal presence of bindweed and certain other non-planted species (e.g., Virginia creeper, raspberry) was observed in NRRE areas.

**III. FOLLOW-UP MAINTENANCE AND REPAIR ACTIVITIES**

- Based on the arborist recommendation, continue to maintain (fertilize) the large red oak and maple trees planted along the eastern bank of Silver Lake in the I9-9-35 monitoring area.
- Removed water chestnuts from Silver Lake and monitored this species as part of the general invasive species control program.
- Perform invasive species control in 2019, as necessary.

**ATTACH ADDITIONAL INFORMATION AS APPROPRIATE**



**TABLE B-1  
SUMMARY OF MONITORING PLOT PLANTING COUNTS**

**SILVER LAKE AREA  
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

**Date(s) of Monitoring: August 29, 2018**

Area	Plot No.	Dimensions			Number of Trees							Number of Shrubs												Herbaceous Cover (%)	Invasive Plant Cover (%)
		Length (ft)	Width (ft)	Area (ft <sup>2</sup> )	BW	SiM	EC	SuM	RO	RM	Total Trees	ROD	SD	WH	CC	NA	NV	SB	BCB	PW	SA	BB	Total Shrubs		
I9-10-9 Area	I9-10-9-1	65	11	730	0	0	0	0	0	0	0	20	0	3	0	3	0	0	0	0	0	0	26	100%	<5%
	I9-10-9-2	60	29	1,890	3	2	0	0	0	0	5	19	0	4	0	4	0	0	0	0	0	0	27	100%	<5%
I9-9-36 Area	I9-9-36-1	59	41	2,320	0	0	0	0	0	0	0	23	2	5	1	7	1	0	2	0	0	0	41	100%	5%
	I9-9-36-2	57	45	2,490	0	0	0	0	0	0	0	25	1	7	0	7	1	0	0	1	2	0	44	100%	<5%
	I9-9-36-3	61	33	1,880	0	0	0	0	0	0	0	25	1	6	2	7	0	0	0	2	2	0	45	100%	5%
	I9-9-36-4	60	29	1,930	0	0	0	0	0	0	0	19	2	6	3	6	1	0	3	0	0	0	40	100%	0%
Shrub-Scrub Island Area	SSI-1	25	20	500	0	0	0	0	0	0	0	34	0	0	0	0	0	0	0	0	0	3	37	100%	<5%
	SSI-2	25	20	500	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	0	9	33	100%	5-10%
I9-9-35 Area	I9-9-35-1	59	51	2,970	0	0	0	0	0	0	0	17	2	4	1	5	1	0	2	1	1	0	34	100%	<5%
	I9-9-35-2	63	28	1,780	0	0	0	3	2	1	6	18	0	0	0	0	0	0	0	0	0	0	18	100%	<5%
	I9-9-35-3	59	34	2,170	0	0	0	2	2	1	5	15	0	0	0	0	0	0	0	0	0	0	15	100%	<5%
	I9-9-35-4	61	27	1,450	2	0	2	0	0	0	4	5	0	3	0	4	0	0	0	0	0	0	12	100%	<5%

Species Legend

BW = black willow

SiM = silver maple

EC = eastern cottonwood

SuM = sugar maple

RO = red oak

RM = red maple

ROD = red-osier dogwood

SD = silky dogwood

WH = winterberry holly

CC = choke cherry

NA = northern arrowwood

NV = nannyberry viburnum

SB = serviceberry

BCB = black chokeberry

PW = pussy-willow

SA = speckled alder

BB = buttonbush

**TABLE B-2  
SUMMARY OF QUANTITATIVE ASSESSMENT**

**SILVER LAKE AREA  
GENERAL ELECTRIC COMPANY - PITTSFIELD, MASSACHUSETTS**

Date(s) of Monitoring: August 29, 2018

Area	Plot No.	Trees				Shrubs				Herbaceous Cover (%)	Invasive Plant Cover (%)
		# Planted	# Alive	% Survival	> 80% Survival	# Planted	# Alive	% Survival	> 80% Survival		
I9-10-9	I9-10-9-1	0	0	NA	--	29	26	90%	--	100%	<5%
	I9-10-9-2	4	5	100%	--	29	27	93%	--	100%	<5%
	Average	--	--	100%	YES	--	--	91%	YES	100%	<5%
I9-9-36	I9-9-36-1	0	0	NA	--	55	41	75%	--	100%	5%
	I9-9-36-2	0	0	NA	--	52	44	85%	--	100%	<5%
	I9-9-36-3	0	0	NA	--	46	45	98%	--	100%	5%
	I9-9-36-4	0	0	NA	--	43	40	93%	--	100%	0%
	Average	--	--	NA	NA	--	--	88%	YES	100%	<5%
Shrub-Scrub Island	SSI-1	0	0	NA	--	37	37	100%	--	100%	<5%
	SSI-2	0	0	NA	--	40	33	83%	--	100%	5-10%
	Average	--	--	NA	NA	--	--	91%	YES	100%	<5%
I9-9-35	I9-9-35-1	0	0	NA	--	38	34	89%	--	100%	<5%
	I9-9-35-2	6	6	100%	--	15	18	100%	--	100%	<5%
	I9-9-35-3	5	5	100%	--	15	15	100%	--	100%	<5%
	I9-9-35-4	3	4	100%	--	13	12	92%	--	100%	<5%
	Average	--	--	100%	YES	--	--	95%	YES	100%	<5%

Notes:

1. Average percent survival of trees and shrubs is based on only those plots in which trees or shrubs were planted.
2. Averages not meeting the applicable Performance Standards are highlighted in yellow.
3. NA = Not applicable.



**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-10-9 Area **Approximate Size (sf):** 8,400

**Monitoring Plot:** I9-10-9-1 **Approximate Size (sf):** 730

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	20	19	1	Same
Silver maple	0	0	0	NA	Silky dogwood	0	0	0	NA
Eastern cottonwood	0	0	0	NA	Winterberry Holly	4	2	1	-1
Sugar maple	0	0	0	NA	Choke cherry	0	0	0	NA
Red oak	0	0	0	NA	Northern arrowwood	5	3	0	-2
Red maple	0	0	0	NA	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
Total	0	0	0	NA	Total	29	24	2	-3

**Total Live Trees:** 0

**Total Live Shrubs:** 26

**Herbaceous Cover (%):** 100%.

**Invasive Plant Cover (%):** <5% (purple loosestrife).

**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-10-9 Area **Approximate Size (sf):** 8,400

**Monitoring Plot:** I9-10-9-2 **Approximate Size (sf):** 1,890

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	2	3	0	+1	Red-osier dogwood	19	19	0	Same
Silver maple	2	2	0	Same	Silky dogwood	0	0	0	NA
Eastern cottonwood	0	0	0	NA	Winterberry Holly	5	3	1	-1
Sugar maple	0	0	0	NA	Choke cherry	0	0	0	NA
Red oak	0	0	0	NA	Northern arrowwood	5	4	0	-1
Red maple	0	0	0	NA	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
<b>Total</b>	<b>4</b>	<b>5</b>	<b>0</b>	<b>+1</b>	<b>Total</b>	<b>29</b>	<b>26</b>	<b>1</b>	<b>-2</b>

**Total Live Trees:** 5

**Total Live Shrubs:** 27

**Herbaceous Cover (%):** 100%.

**Invasive Plant Cover (%):** <5% (hedge bindweed).



**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-36 Area **Approximate Size (sf):** 44,400

**Monitoring Plot:** I9-9-36-1 **Approximate Size (sf):** 2,320

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	26	23+	0	-3
Silver maple	0	0	0	NA	Silky dogwood	2	2	0	Same
Eastern cottonwood	0	0	0	NA	Winterberry Holly	10	5	0	-5
Sugar maple	0	0	0	NA	Choke cherry	3	1	0	-2
Red oak	0	0	0	NA	Northern arrowwood	9	7	0	-2
Red maple	0	0	0	NA	Nannyberry viburnum	1	1	0	Same
					Serviceberry	2	0	0	-2
					Black chokeberry	2	2	0	Same
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
Total	0	0	0	NA	Total	55	41+	0	-14 (see Note)

**Total Live Trees:** NA **Total Live Shrubs:** 41

**Herbaceous Cover (%):** 100% **Invasive Plant Cover (%):** 5% (purple loosestrife, oriental bittersweet, common buckthorn).

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.

**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-36 Area **Approximate Size (sf):** 44,400

**Monitoring Plot:** I9-9-36-2 **Approximate Size (sf):** 2,490

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	25	25	0	Same
Silver maple	0	0	0	NA	Silky dogwood	2	1	0	-1
Eastern cottonwood	0	0	0	NA	Winterberry Holly	10	7	0	-3
Sugar maple	0	0	0	NA	Choke cherry	0	0	0	NA
Red oak	0	0	0	NA	Northern arrowwood	9	7	0	-2
Red maple	0	0	0	NA	Nannyberry viburnum	1	1	0	Same
					Serviceberry	2	0	0	-2
					Black chokeberry	0	0	0	NA
					Pussy-willow	1	1+	0	Same
					Speckled alder	2	2	0	Same
					Buttonbush	0	0	0	NA
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NA</b>	<b>Total</b>	<b>52</b>	<b>44+</b>	<b>0</b>	<b>-8 (see Note)</b>

**Total Live Trees:** NA

**Total Live Shrubs:** 44

**Herbaceous Cover (%):** 100%.

**Invasive Plant Cover (%):** <5% (oriental bittersweet, common buckthorn).

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.



**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-36 Area **Approximate Size (sf):** 44,400

**Monitoring Plot:** I9-9-36-3 **Approximate Size (sf):** 1,880

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	23	25	0	+2
Silver maple	0	0	0	NA	Silky dogwood	1	1	0	Same
Eastern cottonwood	0	0	0	NA	Winterberry Holly	8	6	0	-2
Sugar maple	0	0	0	NA	Choke cherry	2	2	0	Same
Red oak	0	0	0	NA	Northern arrowwood	7	7	0	Same
Red maple	0	0	0	NA	Nannyberry viburnum	0	0	0	NA
					Serviceberry	1	0	0	-1
					Black chokeberry	0	0	0	NA
					Pussy-willow	2	2	0	Same
					Speckled alder	2	2	0	Same
					Buttonbush	0	0	0	NA
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NA</b>	<b>Total</b>	<b>46</b>	<b>45</b>	<b>0</b>	<b>-1 (see Note)</b>

**Total Live Trees:** NA **Total Live Shrubs:** 45

**Herbaceous Cover (%):** 100% **Invasive Plant Cover (%):** 5% (oriental bittersweet, purple loosestrife, Russian olive).

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.

**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-36 Area **Approximate Size (sf):** 44,400

**Monitoring Plot:** I9-9-36-4 **Approximate Size (sf):** 1,930

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	17	19	0	+2
Silver maple	0	0	0	NA	Silky dogwood	2	2	0	Same
Eastern cottonwood	0	0	0	NA	Winterberry Holly	6	6	0	Same
Sugar maple	0	0	0	NA	Choke cherry	3	2	1	Same
Red oak	0	0	0	NA	Northern arrowwood	6	6	0	Same
Red maple	0	0	0	NA	Nannyberry viburnum	3	1	0	-2
					Serviceberry	2	0	0	-2
					Black chokeberry	4	2	1	-1
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
Total	0	0	0	NA	Total	43	38	2	-3 (see Note)

**Total Live Trees:** NA **Total Live Shrubs:** 40

**Herbaceous Cover (%):** 100%. **Invasive Plant Cover (%):** 0%.

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.



**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** Shrub-Scrub Island Area **Approximate Size (sf):** 21,400

**Monitoring Plot:** SSI-1 **Approximate Size (sf):** 500

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	34	34+	0	Same
Silver maple	0	0	0	NA	Silky dogwood	0	0	0	NA
Eastern cottonwood	0	0	0	NA	Winterberry Holly	0	0	0	NA
Sugar maple	0	0	0	NA	Choke cherry	0	0	0	NA
Red oak	0	0	0	NA	Northern arrowwood	0	0	0	NA
Red maple	0	0	0	NA	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	3	2	1	Same
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NA</b>	<b>Total</b>	<b>37</b>	<b>36+</b>	<b>1</b>	<b>Same (see Note)</b>

**Total Live Trees:** NA

**Total Live Shrubs:** 37

**Herbaceous Cover (%):** 100%.

**Invasive Plant Cover (%):** <5% (purple loosestrife, phragmites, Canada thistle).

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.

**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** Shrub-Scrub Island Area **Approximate Size (sf):** 21,400

**Monitoring Plot:** SSI-2 **Approximate Size (sf):** 500

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	24	24+	0	Same
Silver maple	0	0	0	NA	Silky dogwood	0	0	0	NA
Eastern cottonwood	0	0	0	NA	Winterberry Holly	0	0	0	NA
Sugar maple	0	0	0	NA	Choke cherry	0	0	0	NA
Red oak	0	0	0	NA	Northern arrowwood	0	0	0	NA
Red maple	0	0	0	NA	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	16	9	0	-7
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NA</b>	<b>Total</b>	<b>40</b>	<b>33+</b>	<b>0</b>	<b>-7 (see Note)</b>

**Total Live Trees:** NA

**Total Live Shrubs:** 33

**Herbaceous Cover (%):** 100% **Invasive Plant Cover (%):** 5-10% (purple loosestrife, phragmites, Canada thistle).

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.



**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-35 Area **Approximate Size (sf):** 42,400

**Monitoring Plot:** I9-9-35-1 **Approximate Size (sf):** 2,970

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	17	17	0	Same
Silver maple	0	0	0	NA	Silky dogwood	2	2	0	Same
Eastern cottonwood	0	0	0	NA	Winterberry Holly	5	4	0	-1
Sugar maple	0	0	0	NA	Choke cherry	1	1	0	Same
Red oak	0	0	0	NA	Northern arrowwood	5	5	0	Same
Red maple	0	0	0	NA	Nannyberry viburnum	2	0	1	-1
					Serviceberry	1	0	0	-1
					Black chokeberry	3	1	1	-1
					Pussy-willow	1	1	0	Same
					Speckled alder	1	1	0	Same
					Buttonbush	0	0	0	NA
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>NA</b>	<b>Total</b>	<b>38</b>	<b>32</b>	<b>2</b>	<b>-4 (see Note)</b>

**Total Live Trees:** NA

**Total Live Shrubs:** 34

**Herbaceous Cover (%):** 100%.

**Invasive Plant Cover (%):** <5% (purple loosestrife).

**Note:** Identifying individual plants is difficult in this monitoring plot due to dense cover of shrubs.

FORM B-1  
NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM

SILVER LAKE AREA  
GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS

Inspection Date: August 29, 2018

Conducted By/Observer(s): Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

Weather Conditions: Clear, sunny, 80-90 degrees Fahrenheit

Monitoring Area: I9-9-35 Area Approximate Size (sf): 42,400  
Monitoring Plot: I9-9-35-2 Approximate Size (sf): 1,780

Stem Count:

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	15	18+	0	+3
Silver maple	0	0	0	NA	Silky dogwood	0	0	0	NA
Eastern cottonwood	0	0	0	NA	Winterberry Holly	0	0	0	NA
Sugar maple	3	3	0	Same	Choke cherry	0	0	0	NA
Red oak	2 <sup>1</sup>	2	0	Same	Northern arrowwood	0	0	0	NA
Red maple	1 <sup>1</sup>	1	0	Same	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
Total	6	6	0	Same	Total	15	18+	0	+3

Total Live Trees: 6 Total Live Shrubs: 18

Were two or more *adjacent* trees observed to be dead (Y/N) (applicable only to the 30 large trees on the eastern bank of Silver Lake): N

Herbaceous Cover (%): 100% Invasive Plant Cover (%): <5% (hedge bindweed, coltsfoot, purple loosestrife).

<sup>1</sup> Although the May 2014 stem count established that the baseline indicated that three red oaks and no red maples were planted in this monitoring plot, during the May 2015 and August 2015 inspection it was determined that two red oak and one red maple were planted. The "# planted" column has been amended based on these observations.



**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-35 Area **Approximate Size (sf):** 42,400

**Monitoring Plot:** I9-9-35-3 **Approximate Size (sf):** 2,170

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	0	0	0	NA	Red-osier dogwood	15	15	0	Same
Silver maple	0	0	0	NA	Silky dogwood	0	0	0	NA
Eastern cottonwood	0	0	0	NA	Winterberry Holly	0	0	0	NA
Sugar maple	2	2	0	Same	Choke cherry	0	0	0	NA
Red oak	2	2	0	Same	Northern arrowwood	0	0	0	NA
Red maple	1	1	0	Same	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
<b>Total</b>	<b>5</b>	<b>5</b>	<b>0</b>	<b>Same</b>	<b>Total</b>	<b>15</b>	<b>15</b>	<b>0</b>	<b>Same</b>

**Total Live Trees:** 5

**Total Live Shrubs:** 15

**Were two or more *adjacent* trees observed to be dead (Y/N) (applicable only to the 30 large trees on the eastern bank of Silver Lake):** N

**Herbaceous Cover (%):** 100%

**Invasive Plant Cover (%):** <5% (trace hedge bindweed)

**FORM B-1**  
**NATURAL RESOURCE RESTORATION/ENHANCEMENT QUANTITATIVE VEGETATION MONITORING FIELD FORM**

**SILVER LAKE AREA**  
**GENERAL ELECTRIC COMPANY – PITTSFIELD, MASSACHUSETTS**

**Inspection Date:** August 29, 2018

**Conducted By/Observer(s):** Mike Long, Gregg Rabasco of Arcadis,  
Izabela Zapisek of Avatar Environmental, Robin McEwan of Stantec and Tom Potter of MDEP

**Weather Conditions:** Clear, sunny, 80-90 degrees Fahrenheit

**Monitoring Area:** I9-9-35 Area **Approximate Size (sf):** 42,400

**Monitoring Plot:** I9-9-35-4 **Approximate Size (sf):** 1,450

**Stem Count:**

Trees	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Trees to Baseline	Shrubs	# Planted (Baseline)	# Alive & Healthy	# Alive, Stressed	Comparison of # Live Shrubs to Baseline
Black willow	2	1	1	Same	Red-osier dogwood	5	4	1	Same
Silver maple	0	0	0	NA	Silky dogwood	0	0	0	NA
Eastern cottonwood	1	2+	0	+1	Winterberry Holly	4	2	1	-1
Sugar maple	0	0	0	NA	Choke cherry	0	0	0	NA
Red oak	0	0	0	NA	Northern arrowwood	4	3	1	Same
Red maple	0	0	0	NA	Nannyberry viburnum	0	0	0	NA
					Serviceberry	0	0	0	NA
					Black chokeberry	0	0	0	NA
					Pussy-willow	0	0	0	NA
					Speckled alder	0	0	0	NA
					Buttonbush	0	0	0	NA
<b>Total</b>	<b>3</b>	<b>3+</b>	<b>1</b>	<b>+1</b>	<b>Total</b>	<b>13</b>	<b>9</b>	<b>3</b>	<b>-1</b>

**Total Live Trees:** 4

**Total Live Shrubs:** 12

**Herbaceous Cover (%):** 100%.

**Invasive Plant Cover (%):** <5% (trace purple loosestrife).



ATTACHMENT C



**Attachment C  
Photographic Log**

**Silver Lake Area  
General Electric Company – Pittsfield, Massachusetts**

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**Photograph 1: Shrub-Scrub Island**



**Photograph 2: Shrub-Scrub Island**





**Attachment C  
Photographic Log**

**Silver Lake Area  
General Electric Company – Pittsfield, Massachusetts**

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**Photograph 3: Vegetation along the north shore of Silver Lake**



**Photograph 4: Fourth Street Outfall (looking west)**

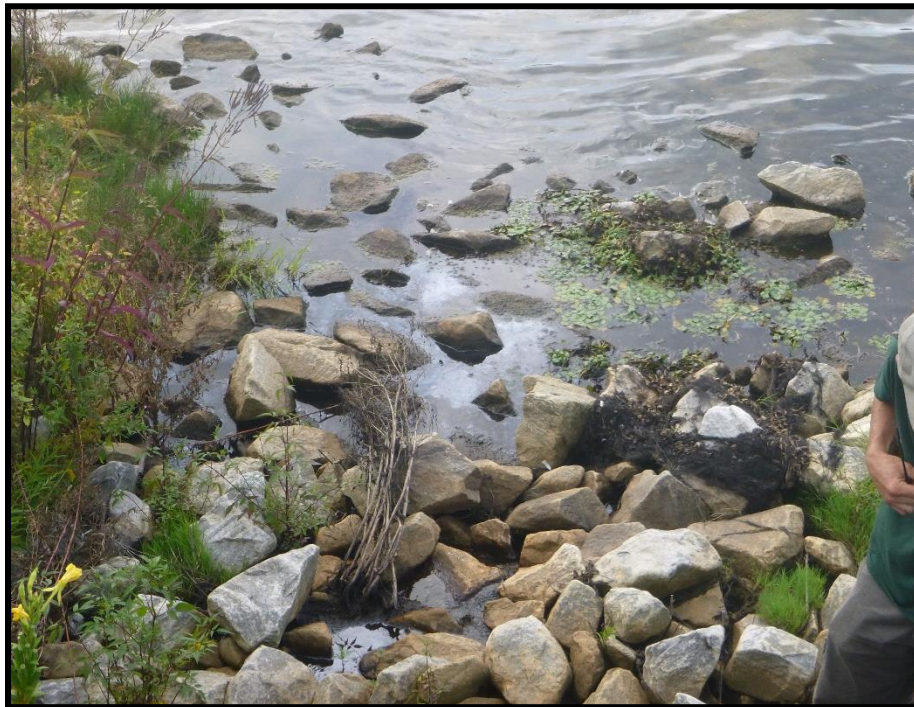




**Photograph 5: Vegetation along Fourth Street (looking east)**



**Photograph 6: Water chestnuts observed in Silver Lake near PED A Outfall**





# ATTACHMENT D



**Attachment D  
Invasive Species of Concern**

**Silver Lake Area  
General Electric Company - Pittsfield, Massachusetts**

<b>Common Name</b>	<b>Scientific Name</b>
Amur honeysuckle	<i>Lonicera maackii</i>
Autumn olive	<i>Elaeagnus umbellata</i>
Black locust	<i>Robinia pseudoacacia</i>
Black swallow-wort	<i>Cynanchum louiseae</i>
Coltsfoot	<i>Tussilago farfara</i>
Common barberry	<i>Berberis vulgaris</i>
Common buckthorn	<i>Rhamnus cathartica</i>
Cypress spurge	<i>Euphorbia cyparissias</i>
Garlic mustard	<i>Alliaria petiolata</i>
Glossy buckthorn	<i>Rhamnus frangula</i>
Goutweed or Bishop's Weed	<i>Aegopodium podagraria</i>
Japanese barberry	<i>Berberis thunbergii</i>
Japanese honeysuckle	<i>Lonicera japonica</i>
Japanese knotweed	<i>Polygonum cuspidatum</i>
Morrow's honeysuckle	<i>Lonicera morrowii</i>
Morrow's X Tatarian	<i>Lonicera xbella</i>
Multiflora rose	<i>Rosa multiflora</i>
Norway maple	<i>Acer platanoides</i>
Oriental bittersweet	<i>Celastrus orbiculata</i>
Phragmites (common reed)	<i>Phragmites australis</i>
Porcelain berry	<i>Ampelopsis brevipedunculata</i>
Purple loosestrife	<i>Lythrum salicaria</i>
Russian olive	<i>Elaeagnus angustifolia</i>
Spotted knapweed	<i>Centaurea biebersteinii</i>
Tartarian honeysuckle	<i>Lonicera tartarica</i>
Yellow iris	<i>Iris pseudacorus</i>

**Notes:**

1. In addition to the listed species, any plant species listed by the Massachusetts Invasive Plant Advisory Group as "Invasive," "Likely Invasive," or "Potentially Invasive" is subject to the invasive species inspection and control activities described for the above list.

**2. Reference:**

Weatherbee, P.B., P. Somers, T. Simmons. 1998. A Guide to Invasive Plants in Massachusetts  
The Massachusetts Biodiversity Initiative. MassWildlife.



December 14, 2018 - Report  
on 2018 Monitoring Cap  
Thickness and Integrity, Cap  
Isolation Layer, and  
Deposition on Cap Surface



**Global Operations, Environment, Health & Safety**

1 Plastics Avenue  
Pittsfield, MA 01201

December 14, 2018

Mr. Christopher Smith  
U.S. Environmental Protection Agency, Region I  
Office of Site Remediation and Restoration  
5 Post Office Square - Suite 100  
Boston, MA 02109-3912

**Re: GE-Pittsfield/Housatonic River Site  
Silver Lake Area (GECD600)  
Report on 2018 Monitoring of Cap Thickness and Integrity, Cap Isolation Layer, and Deposition  
on Cap Surface**

Dear Mr. Smith:

This letter report has been prepared to document the monitoring, inspection, and assessment activities performed by the General Electric Company (GE) in 2018 pertaining to post-remediation conditions of the sediment cap installed in the Silver Lake Area under the Consent Decree (CD) for the GE-Pittsfield/Housatonic River Site. These activities included: (1) the 2018 post-remediation monitoring of cap thickness and integrity; (2) sampling of the isolation layer to assess migration of polychlorinated biphenyls (PCBs), if any, from the underlying sediments; (3) evaluation of the isolation layer samples to evaluate PCB deposition on the surface of the cap; and (4) follow-up visual monitoring of cap integrity. The 2018 post-remediation monitoring was performed in accordance with the applicable requirements of the Post-Removal Site Control (PRSC) Plan included in GE's Final Completion Report (FCR) for the Silver Lake Area Removal Action, which was submitted to the U.S. Environmental Protection Agency (EPA) on May 20, 2015 and approved by EPA on June 22, 2015. The applicable Performance Standards for the Silver Lake post-remediation cap monitoring and evaluation are set forth in Section 2.6 and Attachment K of the Statement of Work for Removal Actions Outside the River (Appendix E to the CD) and summarized in the PRSC Plan in the FCR.

GE last performed post-remediation monitoring of the sediment cap thickness and integrity in September and October 2017 and submitted a letter report on that monitoring to EPA on November 3, 2017, which EPA conditionally approved on November 22, 2017. GE last performed post-remediation monitoring of the cap isolation layer and deposition on the cap in October and November 2014 and submitted a letter report on that monitoring to EPA on December 29, 2014, which EPA conditionally approved on January 22, 2015.

**Summary of 2018 Monitoring Events and Results**

On September 18-20, 2018, GE performed the scheduled 2018 post-remediation monitoring of the Silver Lake cap to assess cap thickness and integrity and collection of cap material cores. Cap thickness monitoring locations are shown on Figure 1. This monitoring event constituted the fifth annual post-construction monitoring event of the cap thickness and integrity and second post-construction monitoring event of the cap isolation layer and deposition on the cap. The visual assessment of cap integrity could not be completed in September 2018 and an additional mobilization was required in October to visually monitor cap integrity. GE used an underwater camera to visually assess the Silver Lake cap integrity on October 4, 2018, thus completing the 2018 monitoring program. Both the September and the October monitoring activities were performed by Gregg Rabasco of Arcadis (on GE's behalf), and the cap thickness monitoring event in September was also attended by Christopher Smith of EPA and Izabela Zapisek of Avatar Environmental, Inc. and Thomas Czelusniak of Weston Solutions, Inc. (both on EPA's behalf).



In accordance with the PRSC Plan in the FCR, the September 2018 post-construction monitoring event to assess cap thickness consisted of the collection of cores at 21 locations, and processing of ten of those collected cores for PCB analysis. The October monitoring event was performed to visually inspect the cap with an underwater camera. The analytical results for the cap material cores were received and validated in November 2018. A summary of the performance of the 2018 monitoring activities and associated results is presented below, followed by an assessment of the results.

### ***Cap Thickness and Integrity***

In accordance with the PRSC Plan in the FCR, cap material cores were collected at 21 locations in Silver Lake and processed in order to assess the in-place cap thickness. At each location, a representative core was collected by physically pushing a Lexan tube to the apparent bottom of the cap and into the native sediment, and then bringing the tube to the surface. Core collection locations are illustrated on Figure 1. To avoid specific locations that may have been previously sampled, each of the target locations for cap core collection during this fifth post-construction monitoring event were set approximately five feet away and in the northwest direction from the locations of the cores collected during construction. Once the cores were recovered (i.e., brought to the surface), field personnel measured the assumed cap thickness through the Lexan to assess whether a core appeared to represent cap thickness greater than or less than 14 inches. During that initial visual inspection (i.e., prior to processing), none of the cores collected appeared to show less than 14 inches of cap thickness.

Once all of the cores were collected, they were processed and the thickness of the cap material in each core was measured. Thickness of cap material in the core-collection tube was measured as the distance from the approximate top of the cap material, excluding observed deposition, to the apparent interface of cap material with the underlying sediment. If a mixing layer had been observed at the bottom of the core, the thickness measurement would have extended to the bottom of the mixing layer given that the EPA-approved design for the 14-inch cap included a 2-inch mixing layer.<sup>1</sup> However, none of the cores collected in 2018 was observed to have a mixing layer (i.e., a layer with the visual characteristics of a transition zone) with measurable thickness.

The results of the cap thickness monitoring performed in September 2018 are presented in Table 1. As shown in Table 1, the cap thickness measurements from the 2018 event indicate that the cap thickness met or exceeded the design Performance Standard of 14 inches at all locations except three (SL-CAP-07, -11, and -17). At two of those locations, the results indicated a thickness of slightly less than 14 inches (13.25 inches for SL-CAP-07 and 13.50 inches for SL-CAP-17); and at the third location, the results indicated a thickness within 1.5 inches of the criterion (12.50 inches for SL-CAP-11). However, at all locations, including those three, the thickness of the cores, which did not include a mixing layer, exceeded the 12-inch design thickness for the operative layers of the cap (i.e., a 6-inch bioturbation layer and a 6-inch isolation layer) excluding the sacrificial mixing layer. The average thickness of the cores at all locations in the lake is approximately 16 inches. In addition, the overall results from the cores showed deposition of sediments on top of the cap of up to 2.5 inches, including 1.5 inches at the location with a cap thickness of 12.5 inches (SL-CAP-11) (Table 1).

### ***Cap Isolation Layer***

During the 2018 fifth-year (Year 5) post-construction monitoring event, ten of the cap material cores collected for assessing cap thickness were also subject to PCB analysis. The ten locations selected for PCB analysis are illustrated on Figure 1. Cores from these locations were processed in accordance with Appendix Q of the FCR, and sectioned into three intervals, as measured relative to the interface between the cap material and the underlying sediment layer. These three intervals were the bottom approximate two-inch layer of the observed cap material taken just above the apparent interface with the underlying sediment (referred to herein as the Mixing interval, even though, as noted above, that interval did not show the visual characteristics of a mixing layer in any of the cores), the top one inch of the core (TOP layer), and the remaining portion of the core between those

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<sup>1</sup> As specified in the *Revised Final Removal Design/Removal Action Work Plan for Silver Lake Area* (August 2011) (p. 59), the EPA-approved design of the Silver Lake cap called for a total thickness of 14 inches, which included a 6-inch layer for bioturbation, a 6-inch isolation layer, and a 2-inch mixing layer.



increments (REM layer). At one location, SL-CAP-14, after collecting the top one inch of the core, a full inch of deposition material remained; therefore, the GE and EPA representatives decided to remove and discard that extra inch of deposition material (i.e., the 1- to 2-inch interval) prior to processing the REM layer, so that the top of the REM layer was at a core depth of two inches.

Processed samples from the Mixing, REM, and TOP intervals of each core location were analyzed for PCBs. The results of the analytical testing from these sampled intervals are presented in Table 2. The data validation report for the PCB results is provided in Attachment 1, which concludes that 100% of the data are usable. In addition, EPA collected and arranged for the analysis of split samples from SL-CAP-06 (REM layer), SL-CAP-08 (Mixing interval), SL-CAP-10 (REM layer), SL-CAP-19 (REM layer), and SL-CAP-20 (Mixing interval). The analytical results for these split samples were provided by EPA and are provided in Attachment 2.

As indicated in Table 2, the PCB results from the Mixing interval ranged from not detected (ND) to 2.32 parts per million (ppm) and average 0.52 ppm, the results from the REM interval ranged from ND to 0.24 ppm and average 0.052 ppm, and the results from the TOP interval range from ND to 0.99 ppm and average 0.27 ppm.<sup>2</sup>

### ***Deposition on Cap Surface***

The PCB analytical results from the above-referenced samples collected during the fifth-year monitoring event were also reviewed to assess the presence and extent of PCB deposition on the surface of the cap, as opposed to the migration of PCBs through the cap from the underlying sediments. The analytical results from the samples collected from the TOP interval indicate the presence of some PCBs at low levels (ND to 0.99 ppm, with an average of 0.27 ppm) on the surface of the cap that are likely a result of deposition. However, there does not appear to be an identifiable potential source or sources of those PCBs, and there is no apparent pattern or relationship between the detections and particular types of locations. For instance, of the nine locations with PCB detections in the surface (i.e., the TOP interval) in 2018, the location with the highest detection (0.99 ppm at SL-CAP-14) is situated mid-lake in deep water in the eastern part of the lake, the location with the next highest concentration (0.50 ppm at SL-CAP-08) is in deep water near the steep-sloped northern shore of the lake, and the location with the third highest concentration (0.29 ppm at SL-CAP-19) is immediately adjacent to the PEDA outfall on the eastern shore of the lake.

### ***Visual Observation of Cap Integrity***

The visual inspection of the surface of the cap was performed in October 2018 by Gregg Rabasco of Arcadis in the vicinity of core collection locations. In general, visual observations, made with an underwater camera, indicated the presence of a layer of sediment deposition over sand. No signs of cap failure or compromise were observed, and the observations through the underwater camera indicated that the surface of the cap appears to be of a generally consistent nature, without significant signs of depressions and/or holes. A complete summary of the visual observations is presented in Table 3.

## **Assessment of 2018 Results**

### ***Assessment of Cap Thickness and Integrity***

As discussed above and shown in Table 1, the September 2018 cap thickness measurements indicate that the design standards for the cap thickness have generally been maintained, since those measurements indicate that the cap thickness met or exceeded the design Performance Standard of 14 inches at 18 of the 21 monitoring locations (86%). For the three monitoring locations where the results indicated a thickness of less than 14 inches, the measurements at two locations were only slightly less than 14 inches but within one inch of that criterion (13.25 inches for SL-CAP-07 and 13.50 inches for SL-CAP-17), and the measurement at the third location indicated a thickness within 1.5 inches of the criterion (12.50 inches for SL-CAP-11), with sediment deposition at the same

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<sup>2</sup> To determine the average concentrations, half of the reporting limit was assumed for ND results.



location of 1.5 inches. Moreover, the average thickness of the cap over the lake was well above the 14-inch design Performance Standard. Further, the visual observations made in October 2018 indicated that the cap appears to be of a generally consistent nature without significant signs of depression and/or holes.

In evaluating these data, it is necessary to recognize that variability in individual cap thickness measurements would be expected in a waterbody approximately five years after installation. It is thus important to note that the great majority of cap core locations (as well as the lake-wide average) met the design Performance Standard of 14 inches, as has been true since cap monitoring began. Table 4 presents the results of the cap thickness measurements performed in 2018 along with the thickness measurements from the first four years of post-construction monitoring in 2014, 2015, 2016, and 2017 and those made immediately after initial cap placement (2013), as well as an overall average for each location over the six monitoring events. Note that this table presents cap thickness measurement averages for those locations where multiple cores were collected during any one event. Figure 2 illustrates the cap thickness measurements made in each event at each location over time, as well as an overall average for each location over the six monitoring events. As shown in Table 4 and Figure 2, the average cap thickness at each location over the five post-construction monitoring events exceeds (or, at one location, is very close to) the 14-inch Performance Standard.

As noted above, the EPA-approved design of the 14-inch Silver Lake cap included a 6-inch layer for bioturbation, a 6-inch isolation layer, and a 2-inch mixing layer. Thus, the performance of the cap was designed to be based on a thickness of 12 inches of clean material and a sacrificial mixing layer of two inches. As such, in assessing cap thickness, it is important to compare the measured thickness of the clean cap material (excluding any mixing layer) to the design thickness for the upper two layers of the cap (the bioturbation and isolation layers) – i.e., 12 inches. In the 2018 monitoring, as also noted above, the cap thicknesses at locations SL-CAP-07, SL-CAP-11, and SL-CAP-17 consisted of 13.25 inches, 12.50 inches, and 13.50 inches, respectively, of clean cap material, which are greater than the design standards for the upper two layers of the cap, a combined 12 inches.

Finally, in considering the need for further action, it is appropriate to consider the ongoing deposition of material on top of the cap surface, as indicated by both the cap cores (up to 2.5 inches in 2018, with 1.5 inches at location SL-CAP-11) and the prior sediment trap monitoring performed through 2016, since such deposition is effectively adding to the overall cap thickness on top of the underlying sediments at almost all locations.

Based on the factors discussed above, including the achievement of the design standards for the upper two layers of the cap (12 inches excluding the sacrificial mixing layer) at all of the monitored locations, achievement of the overall 14-inch design Performance Standard at 86% of those locations, the expected variability of the cap thickness over time, an overall average cap thickness well above 14 inches, visual observations of cap integrity, and the presence of ongoing deposition, GE submits that there is no need at the present time to take any corrective action to increase the thickness of the cap.

### ***Assessment of Cap Isolation Layer***

The Performance Standard for the isolation layer monitoring requires that, if the sampling results indicate that the isolation layer is not performing in general accordance with the predictions on which the cap design was based in terms of effectively controlling migration of PCBs from the underlying sediments through that layer into the surface water of the lake, GE must evaluate appropriate corrective measures, submit the results of that evaluation to EPA for approval, and implement any such measures approved by EPA.

Table 5 presents and Figure 3 illustrates the total PCB results from the 2018 (Year 5) and 2014 (Year 1) post-construction monitoring events along with the total PCB results from the samples collected immediately after construction (in 2013) at the same locations. In evaluating these data, it is necessary to recognize that some variability in the PCB concentrations in the Mixing, REM, and TOP intervals would be expected as the segregation between each interval relies on a qualitative determination by the core processor of the location of the sediment/cap interface. The remainder of this section provides an assessment of the performance of the cap and observations of potential changes in cap conditions.



PCB concentrations in the lowest (Mixing) interval samples decreased, on average, since the completion of cap installation, from an average of 6.84 ppm in 2013 with a maximum of 51.7 ppm at location SL-CAP-01, to an average of 0.82 ppm in 2014 with a maximum of 4.34 ppm at that same location, and finally down to an average of 0.52 ppm in 2018 with a maximum of 2.32 ppm at location SL-CAP-06. Six of the ten locations sampled in 2018 had lower PCB concentrations than were observed in 2013 and 2014, and three of the remaining four locations had lower PCB concentrations than were observed in 2013 (although slightly higher than concentrations observed in 2014). Only at one location, SL-CAP-20, was the 2018 Mixing interval concentration (1.13 ppm) higher than the concentration observed in that interval 2013 (0.75 ppm). These data, including the decrease in average PCB concentration in the Mixing interval over time, indicates that there has been no appreciable gain of PCBs within the lower level of the cap, as would be expected if PCB migration were occurring from the underlying native sediment.

In the cap material REM interval, the 2018 PCB concentrations were non-detect or below 0.1 ppm (with the exception of 0.239 ppm at SL-CAP-04). PCBs were detected in three REM samples collected in 2018, compared to three in 2014 and four post-placement in 2013. The average concentration of 0.05 ppm in 2018 is similar to that observed in 2014 (0.04 ppm), and lower than the average of 0.17 ppm associated with samples collected in 2013 immediately after cap construction, indicating no gain of PCBs within the cap as would be expected if PCB migration into the cap material were occurring.

PCB concentrations in the surface layer samples (TOP interval) decreased, on average, since the first-year post-construction monitoring event in 2014, from an average of 0.32 ppm in 2014 to an average of 0.26 ppm in 2018. Although the PCB concentrations in the surface layer samples collected in 2018, like those collected in 2014, increased from those in the samples collected immediately after cap installation (average of 0.03 ppm), the data suggest that those increases were most likely due to deposition (discussed below), not migration from the underlying sediments. Four of the locations sampled in 2018 had slightly higher surface sediment PCB concentrations than in 2014 or had detectable PCB concentrations where they were previously not detected. At three of those locations, PCBs were not detected in the underlying REM interval; and at the other location, the PCB concentration in the REM interval was considerably lower than that observed in the TOP interval. Together, these data, along with the data from the Mixing interval, show no PCB concentration gradient that would suggest the migration of PCBs through the isolation layer of the cap.

Overall, the PCB results from 2013, 2014, and 2018 presented in Table 5 and illustrated in Figure 3 provide no indication that the isolation layer is failing to perform in general accordance with the predictions on which the cap design was based in terms of effectively limiting the migration of PCBs from the underlying sediments through that layer into the surface water of the lake. Thus, GE submits that no response actions for the isolation layer are necessary at this time.

### ***Assessment of Deposition on Cap Surface***

The Performance Standard for monitoring of the deposition of PCBs on the cap surface requires GE to evaluate, to the extent practicable, whether deposited PCBs detected on the surface of the cap (as opposed to migration of PCBs through the cap from the underlying sediments) are attributable to sources other than erosion or surface runoff from the banks or currently known discharges of PCBs into the lake from NPDES-permitted or other outfalls. If the surface PCBs can be attributed to such other sources and those sources are located within property owned by GE, GE must evaluate potential source control measures and submit a report on that evaluation to EPA for review and approval, along with a recommendation for any appropriate source control measures. Otherwise, no further response actions are required to address the deposition of PCBs on the surface of the cap (except for any actions to address erosion or required by the CD covenant reopeners).

As discussed above, the PCB results from the surface layer (TOP interval), in conjunction with those from the Mixing and REM intervals, indicate that PCBs have deposited on the surface of the cap. However, as also explained above, there does not appear to be an identifiable potential source or sources of those deposited PCBs,



as there is no apparent pattern or relationship between the detections and particular types of locations.<sup>3</sup> In particular, the PCBs on the surface of the cap cannot be attributed to any identifiable sources other than erosion or surface runoff from the banks or currently known discharges of PCBs into the lake from the NPDES-permitted outfall or other outfalls. Since the surface PCBs cannot be attributed to such other sources, no source control measures are proposed, and no further response actions are necessary to address the deposition of PCBs on the surface of the cap.

### **Future Activities**

The 2018 monitoring event marked the fifth and final year of the post-construction cap monitoring program required by the PRSC Plan in the FCR, and the results of the monitoring events performed to date indicate the requirements for the Silver Lake sediment cap are substantially met with no need for corrective action at this time. However, GE proposes to perform another monitoring event in 5 years or 10 years after construction (in 2023) to continue to assess the cap thickness, cap isolation layer, and PCB deposition on the cap surface.

To mitigate the impact to cap integrity, GE anticipates proposing to collect cores in summer 2023 (likely in August or September) at only approximately half of the 21 locations investigated during construction and during the past five years after construction. Specifically, GE would collect cores from the ten locations at which PCB analysis has been performed during the first five years of monitoring. Core collection and processing will be performed using the general techniques and protocols used to date to monitor the cap thickness and integrity; and samples from the TOP, REM, and Mixing intervals will be processed in a similar manner to those collected in 2013, 2014, and 2018 and will be submitted for PCB analysis. GE proposes not to conduct a visual (underwater) inspection of the cap as part of that monitoring event, since the results of such visual inspections to date have not shown new or different information from that obtained through collection of the cores.

In the spring of 2023, GE will submit to EPA a specific proposal for that 10-year post-construction cap monitoring event.<sup>4</sup> In addition, following the monitoring event, a report will be submitted to EPA, which will present the results and include a proposal regarding whether to terminate the cap monitoring program or to perform another a supplemental monitoring event (e.g., 20-years after construction).

Please contact me if you have any questions regarding the information and conclusions presented in this letter.

Sincerely,

A handwritten signature in dark ink, appearing to read "Lauren Putnam", followed by a horizontal line and the word "for" written in a smaller, cursive script.

Kevin Mooney  
Senior Project Manager – Environmental Remediation

Attachments

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<sup>3</sup> It is also noted that, although the location with the highest detection in the TOP interval in 2018 (SL-CAP-14) also had the highest PCB detection in that interval in 2014, the analytical results show a decrease in PCB concentration at that location (from 1.22 to 0.99 ppm) (Table 5).

<sup>4</sup> The proposal may be submitted concurrently with GE's plan for a fish sampling event in Silver Lake in 2023, as required by Section 8.2.3 of the PRSC Plan in the FCR.

cc: Dean Tagliaferro, EPA\*  
Tim Conway, EPA (without attachments)\*  
Chris Ferry, ASRC Primus\*  
Scott Campbell, Avatar\* (plus hard copy)  
Robert Leitch, USACE\*  
Michael Gorski, MDEP\*  
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Eva Tor, MDEP (without attachments)\*  
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Corydon Thurston, Executive Director, PEDAs\*  
Barbara Landau, Noble, Wickersham & Heart\*  
James Gagnon, O'Reilly, Talbot & Okun\*  
Rod McLaren, GE (without attachments)\*  
Andrew Silfer, GE\*  
James Bieke, Sidley Austin LLP  
Mark Gravelding, Todd Cridge, and Lauren Putnam, Arcadis\*  
GE Internal Repositories

\* *via electronic mail*



# TABLES



**Table 1**  
**Thickness Data for 2018 (Year 5) Post-Construction Monitoring**

**Silver Lake**  
**General Electric Company - Pittsfield, Massachusetts**

Core ID	Sample/ Measurement Date	Approximate Water Depth (ft)	Observed Deposition (inches)	Observed Mixing Layer (inches)	Approximate Cap Thickness (inches) <sup>2</sup>
SL-CAP-01*	9/19/2018	8.4	0.25	0.0	14.75
SL-CAP-02	9/20/2018	18.4	1.0	0.0	15.00
SL-CAP-03	9/20/2018	9.2	0.5	0.0	16.00
SL-CAP-04*	9/19/2018	20.4	1.0	0.0	15.00
SL-CAP-05	9/20/2018	18.0	2.5	0.0	18.50
SL-CAP-06*	9/18/2018	6.2	1.0	0.0	17.00
SL-CAP-07	9/20/2018	8.4	0.25	0.0	13.25
SL-CAP-08*	9/18/2018	20.6	1.25	0.0	15.75
SL-CAP-09	9/20/2018	25.0	0.5	0.0	15.50
SL-CAP-10*	9/18/2018	21.6	1.50	0.0	17.00
SL-CAP-11	9/20/2018	10.0	1.50	0.0	12.50
SL-CAP-12*	9/18/2018	4.6	0.25	0.0	14.25
SL-CAP-13	9/20/2018	24.1	1.0	0.0	18.00
SL-CAP-14*	9/18/2018	27.0	2.0	0.0	14.50
SL-CAP-15	9/20/2018	24.8	0.5	0.0	18.50
SL-CAP-16*	9/18/2018	11.7	0.25	0.0	14.75
SL-CAP-17	9/20/2018	7.2	0.25	0.0	13.50
SL-CAP-18	9/20/2018	24.1	0.5	0.0	18.50
SL-CAP-19*	9/18/2018	12.7	0.25	0.0	18.75
SL-CAP-20*	9/18/2018	23.4	1.0	0.0	23.00
SL-CAP-21	9/20/2018	8.9	0.25	0.0	16.00
Average					16.19

Notes:

1. Cores were collected by Arcadis.

2. The Approximate Cap Thickness would have included a mixing layer, but no separate layer with the visual characteristics of a mixing layer was observed. The Approximate Cap Thickness does not include the Observed Deposition in any core.

\* Core processed for analysis of PCBs.



**Table 2**  
**PCB Data for 2018 (Year 5) Post-Construction Monitoring**

**Silver Lake**  
**General Electric Company - Pittsfield, Massachusetts**  
**(Results are presented in dry weight parts per million, ppm)**

Sample ID	Depth(Inches)	Date Collected	Interval	Aroclor-1016	Aroclor-1221	Aroclor-1232	Aroclor-1242	Aroclor-1248	Aroclor-1254	Aroclor-1260	Total PCBs
SL-CAP-01-YR5	0-1	9/19/2018	TOP	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	0.018 J	0.018 J
	1-13	9/19/2018	REM	ND(0.037)	ND(0.037)	ND(0.037)	ND(0.037)	0.026 J	ND(0.037)	0.026 J	0.052 J
	13-15	9/19/2018	Mixing	ND(0.036)	ND(0.036)	ND(0.036)	ND(0.036)	0.24 J	ND(0.036)	0.35 J	0.59 J
SL-CAP-04-YR5	0-1	9/19/2018	TOP	ND(0.042)	ND(0.042)	ND(0.042)	ND(0.042)	0.054 J	ND(0.042)	0.035 J	0.089 J
	1-14	9/19/2018	REM	ND(0.052)	ND(0.052)	ND(0.052)	ND(0.052)	0.21 J	ND(0.052)	0.029 J	0.239 J
	14-16	9/19/2018	Mixing	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	0.057 J	ND(0.040)	0.059	0.116 J
SL-CAP-06-YR5	0-1	9/18/2018	TOP	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)
	1-16	9/18/2018	REM	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)
	16-18	9/18/2018	Mixing	ND(0.054)	ND(0.054)	ND(0.054)	ND(0.054)	ND(0.054)	0.72	1.6	2.32
SL-CAP-08-YR5	0-1	9/18/2018	TOP	ND(0.088)	ND(0.088)	ND(0.088)	ND(0.088)	ND(0.088)	0.29	0.21 J	0.50 J
	1-15	9/18/2018	REM	ND(0.046)	ND(0.046)	ND(0.046)	ND(0.046)	ND(0.046)	ND(0.046)	ND(0.046)	ND(0.046)
	15-17	9/18/2018	Mixing	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)
SL-CAP-10-YR5	0-1	9/18/2018	TOP	ND(0.066)	ND(0.066)	ND(0.066)	ND(0.066)	ND(0.066)	0.20	ND(0.066)	0.20
	1-16.5	9/18/2018	REM	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)
	16.5-18.5	9/18/2018	Mixing	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)
SL-CAP-12-YR5	0-1	9/18/2018	TOP	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	0.075	ND(0.039)	0.075
	1-12.5	9/18/2018	REM	ND(0.043)	ND(0.043)	ND(0.043)	ND(0.043)	ND(0.043)	ND(0.043)	ND(0.043)	ND(0.043)
	12.5-14.5	9/18/2018	Mixing	ND(0.042)	ND(0.042)	ND(0.042)	ND(0.042)	ND(0.042)	0.062	ND(0.042)	0.062
SL-CAP-14-YR5	0-1	9/18/2018	TOP	ND(0.11)	ND(0.11)	ND(0.11)	ND(0.11)	ND(0.11)	0.59	0.40	0.99
	2-15	9/18/2018	REM	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)	ND(0.050)
	15-17	9/18/2018	Mixing	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	0.12	0.048	0.168
SL-CAP-16-YR5	0-1	9/18/2018	TOP	ND(0.090)	ND(0.090)	ND(0.090)	ND(0.090)	ND(0.090)	0.23 J	ND(0.090)	0.23 J
	1-13	9/18/2018	REM	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)
	13-15	9/18/2018	Mixing	ND(0.039)	ND(0.039)	ND(0.039)	ND(0.039)	0.12 J	ND(0.039)	0.15	0.27 J
SL-CAP-19-YR5	0-1	9/18/2018	TOP	ND(0.041)	ND(0.041)	ND(0.041)	ND(0.041)	0.18	ND(0.041)	0.11	0.29
	1-17	9/18/2018	REM	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)
	17-19	9/18/2018	Mixing	ND(0.046)	ND(0.046)	ND(0.046)	ND(0.046)	0.30 J	ND(0.046)	0.16 J	0.46 J
SL-CAP-20-YR5	0-1	9/18/2018	TOP	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	0.15 J	ND(0.047)	0.084 J	0.234 J
	1-22	9/18/2018	REM	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	0.048 J	ND(0.044)	0.031 J	0.079 J
	22-24	9/18/2018	Mixing	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	0.52 J	ND(0.044)	0.61	1.13 J

**Notes:**

1. Samples were collected by ARCADIS and submitted to SGS Environmental Services, Inc. for analysis of PCBs.
2. ND - Analyte was not detected. The number in parentheses is the associated reporting limit.
3. Samples have been validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, ARCADIS (revised on July 2, 2013 and approved by EPA on July 23, 2013).

**Data Qualifiers:**

J - Indicates an estimated value.

**Table 3**  
**Summary of Visual Observations from October 2018 Post-Construction Monitoring Event**

**Silver Lake**  
**General Electric Company - Pittsfield, Massachusetts**

Location	Comments
SL-CAP-01	Weeds, no native black material, brown sand.
SL-CAP-02	No weeds, no native black material, some organic material on top of sand.
SL-CAP-03	No weeds, no native black material, some algae, some organic material on top of sand.
SL-CAP-04	No weeds, no native black material, some algae, some organic material on top of sand.
SL-CAP-05	No weeds, no native black material, some organic material on top of sand.
SL-CAP-06	No weeds, no native black material, dead organic material (weeds) on top of sand.
SL-CAP-07	No weeds, no native black material, brown sand.
SL-CAP-08	No weeds, no native black material, sand.
SL-CAP-09	No weeds, no native black material, some silt on top of sand.
SL-CAP-10	No weeds, no native black material, some silt on top of sand.
SL-CAP-11	No weeds, no native black material, dead organic material (weeds) and some silt on top of sand.
SL-CAP-12	No weeds, no native black material, some silt on top of sand.
SL-CAP-13	No weeds, no native black material, a little silt on top of sand.
SL-CAP-14	No weeds, no native black material, dead organic material (weeds) and some silt on top of sand.
SL-CAP-15	No weeds, no native black material, dead organic material (weeds) and some silt on top of sand.
SL-CAP-16	No weeds, no native black material, a little algae, some silt on top of sand.
SL-CAP-17	Some weeds, no native black material, some algae, some silt on top of sand.
SL-CAP-18	No weeds, no native black material, some silt on top of sand.
SL-CAP-19	No weeds, no native black material, some silt on top of sand.
SL-CAP-20	No weeds, no native black material, some silt on top of sand.
SL-CAP-21	No weeds, no native black material, some algae, some silt on top of sand.

Note:

1. Visual observations made by Arcadis using an underwater camera on October 4, 2018.



Table 4  
Thickness Data for 2014 (Year 1) through 2018 (Year 5) Post-Construction Monitoring and Immediate Post-Construction Monitoring

Silver Lake  
General Electric Company - Pittsfield, Massachusetts

Core ID	2018 (Year 5) Post-Construction Thickness (inches) <sup>3</sup>	2017 (Year 4) Post-Construction Thickness (inches) <sup>3</sup>	2016 (Year 3) Post-Construction Thickness (inches) <sup>3</sup>	2015 (Year 2) Post-Construction Thickness (inches) <sup>4</sup>	2014 (Year 1) Post-Construction Thickness (inches) <sup>5</sup>	2013 Immediate Post-Construction Thickness (inches) <sup>5</sup>	Average of Five Years (inches)
SL-CAP-01	14.75	28.25	22.75	28.5	28.5 <sup>9</sup>	14.0	22.8
SL-CAP-02	15.00	16.50	15.50	15.0	16.5	19.5	16.3
SL-CAP-03	16.00	13.25	15.50	15.75	15.0	14.0	14.9
SL-CAP-04	15.00	15.50	18.00	15.5	16.0	15.5	15.9
SL-CAP-05	18.50	15.00	22.50	17.0	15.0	15.25	17.2
SL-CAP-06	17.00	13.50	16.75	14.0	20.0	18.5	16.6
SL-CAP-07	13.25	15.00	<b>11.9</b> <sup>6</sup>	<b>12.8</b>	14.5	14.5	13.7
SL-CAP-08	15.75	17.50	15.50	18.25	16.0	16.75	16.6
SL-CAP-09	15.50	16.75	15.00	16.0	17.5	15.5	16.0
SL-CAP-10	17.00	15.75	14.50	14.25	15.0	19.0	15.9
SL-CAP-11	12.50	20.00	<b>14.2</b>	26.5	14.5	18.0	17.6
SL-CAP-12	14.25	15.75	<b>15.2</b>	<b>17.4</b> <sup>7</sup>	18.5	15.5	16.1
SL-CAP-13	18.00	20.00	18.25	20.0	18.5	33.5	21.4
SL-CAP-14	14.50	17.00	14.50	16.0	27.0	21.5	18.4
SL-CAP-15	18.50	21.50	18.25	18.0	19.0	18.25	18.9
SL-CAP-16	14.75	15.50	14.50	<b>14.1</b> <sup>8</sup>	17.0	14.25	15.0
SL-CAP-17	13.50	14.00	<b>13.6</b>	18.5	14.5	14.0	14.7
SL-CAP-18	18.50	21.25	25.75	20.25	20.0	16.25	20.3
SL-CAP-19	18.75	16.75	18.50	18.5	15.0	18.5	17.7
SL-CAP-20	23.00	17.25	17.50	15.0	16.0	16.0	17.5
SL-CAP-21	16.00	18.00	16.75	15.5	21.5	19.25	17.8

Notes (Terms used in these notes come from Table 1.):

1. Cores were collected by Arcadis.

2. Results presented in bold represent the average of the results of four cores collected at and surrounding the given location.

3. For Year 3, the mixing layer was measured where observed and included in the Approximate Cap Thickness. No separate mixing layer was observed in Years 4 or 5. For all three years, the Observed Deposition is not included in the results presented for any core.

4. For the Year 2 September cores the mixing layer was not measured and as such the Approximate Cap Thickness does not include a mixing layer. For the Year 2 November cores (collected at locations SL-CAP-07, -12, and -16), the mixing layer was measured and as such the Approximate Cap Thickness does include a mixing layer, if present, except where noted. The Observed Deposition is not included in the results presented for any core.

5. Year 1 and Immediate Post-Construction Thickness indicates the approximate thickness of the sand-like cap material. Observed Mixing Layer information was not recorded at the time and as such the Thickness presented does not include a mixing layer. The Observed Deposition is not included in the Thickness results presented for any core.

6. For one of the cores comprising this average, SL-CAP-07 Year 3 (9/13/16), the native material below the cap included dark grey fine to medium sand with odor.

7. For one of the cores comprising this average, SL-CAP-12 Year 2 (9/11/15), the core included layers of grey brown fine sand and black silt immediately below the layer measured as the Approximate Cap Thickness.

8. For one of the cores comprising this average, SL-CAP-16-N Year 2 (11/5/15), the Observed Mixing Layer was observed below more than two inches of what appeared to be native sediment material, and as such is not included in the Approximate Cap Thickness measurement.

9. For SL-CAP-01 Year 1 (6/5/15), the result presented is the thickness measured after placement of additional cap material in 2015.

**Table 5**  
**PCB Data for 2018 (Year 5) and 2014 (Year 1) Post-Construction Monitoring and Immediate Post Construction Results**

**Silver Lake**  
**General Electric Company - Pittsfield, Massachusetts**  
**(Results are presented in dry weight parts per million, ppm)**

Sample ID	Interval	2013 Immediate Post-Construction Total PCBs	2014 (Year 1) Post-Construction Total PCBs	2018 (Year 5) Post-Construction Total PCBs
SL-CAP-01	TOP	ND(0.059)	0.253 J	0.018 J
	REM	0.64	0.044 J	0.052 J
	Mixing	51.8	4.34 J	0.59 J
SL-CAP-04	TOP	ND(0.066)	0.41 J	0.089 J
	REM	ND(0.069)	ND(0.075)	0.239 J
	Mixing	0.294	0.269 J	0.116 J
SL-CAP-06	TOP	0.050 J	ND(0.077)	ND(0.047)
	REM	0.081	ND(0.066)	ND(0.038)
	Mixing	3.93	0.753 J	2.32
SL-CAP-08	TOP	ND(0.063)	0.365 J	0.50 J
	REM	ND(0.069)	0.050 J	ND(0.046)
	Mixing	0.154	0.453 J	ND(0.044)
SL-CAP-10	TOP	ND(0.074)	ND(0.099)	0.20
	REM	ND(0.069)	ND(0.082)	ND(0.047)
	Mixing	0.314	0.061 J	ND(0.040)
SL-CAP-12	TOP	ND(0.058)	0.082 J	0.075
	REM	0.734	0.047 J	ND(0.043)
	Mixing	2.06	0.553 J	0.062
SL-CAP-14	TOP	0.041 J	1.22	0.99
	REM	0.043 J	ND(0.094)	ND(0.050)
	Mixing	1.1	0.183 J	0.168
SL-CAP-16	TOP	ND(0.064)	0.57	0.23 J
	REM	ND(0.061)	ND(0.062)	ND(0.040)
	Mixing	6.39	0.169 J	0.27 J
SL-CAP-19	TOP	ND(0.058)	ND(0.064)	0.29
	REM	ND(0.058)	ND(0.058)	ND(0.040)
	Mixing	1.63	1.43 J	0.46 J
SL-CAP-20	TOP	0.025 J	0.135 J	0.234 J
	REM	ND(0.067)	ND(0.074)	0.079 J
	Mixing	0.747	ND(0.069) J	1.13 J

**Notes:**

1. ND - Analyte was not detected. The number in parentheses is the associated reporting limit.
2. Year 1 and Year 5 samples were validated as per Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP), General Electric Company, Pittsfield, Massachusetts, ARCADIS (revised on July 2 , 2013 and approved by EPA on July 23, 2013).

**Data Qualifiers:**

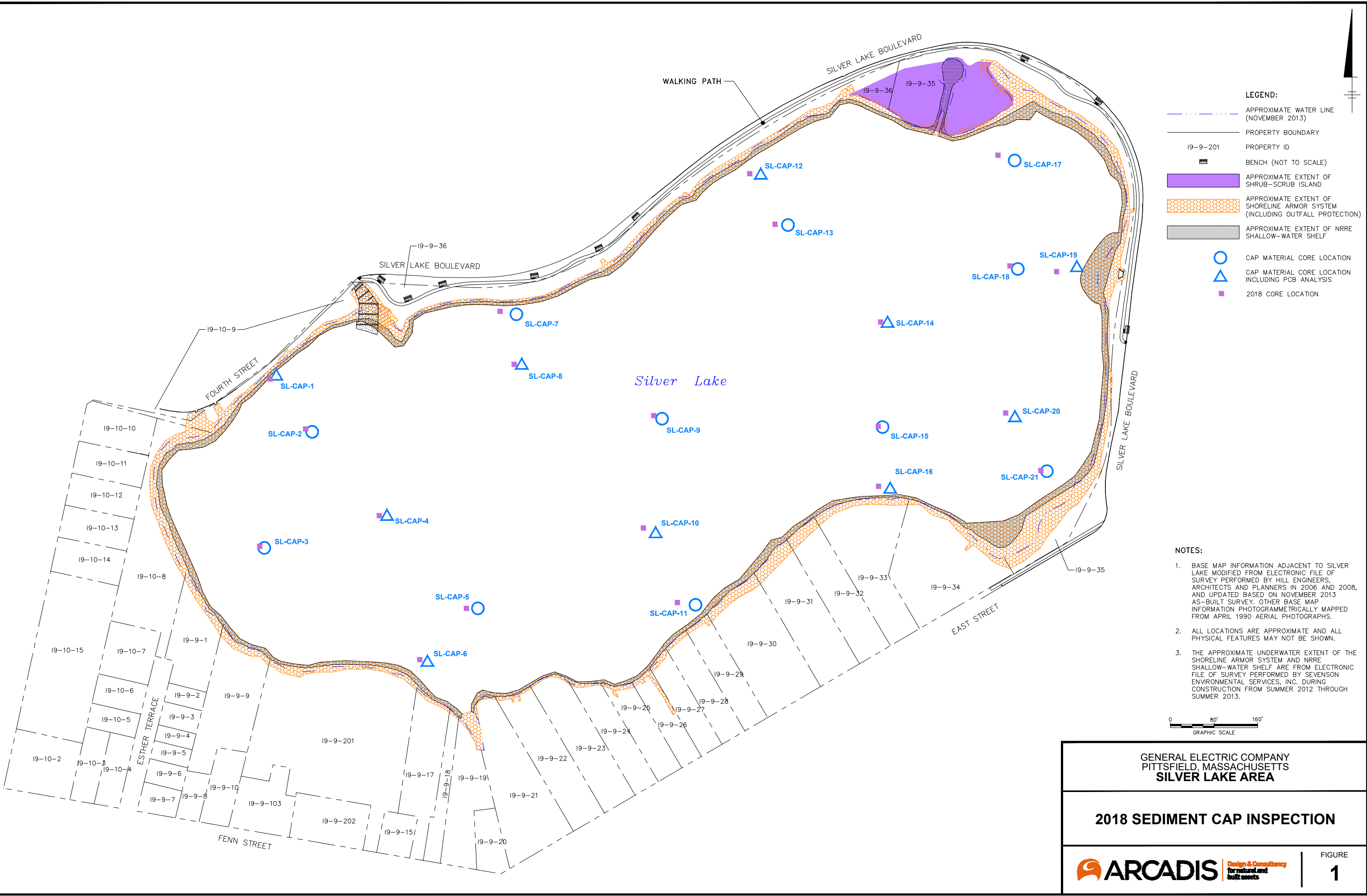
J - Indicates that the associated numerical value is an estimated concentration.



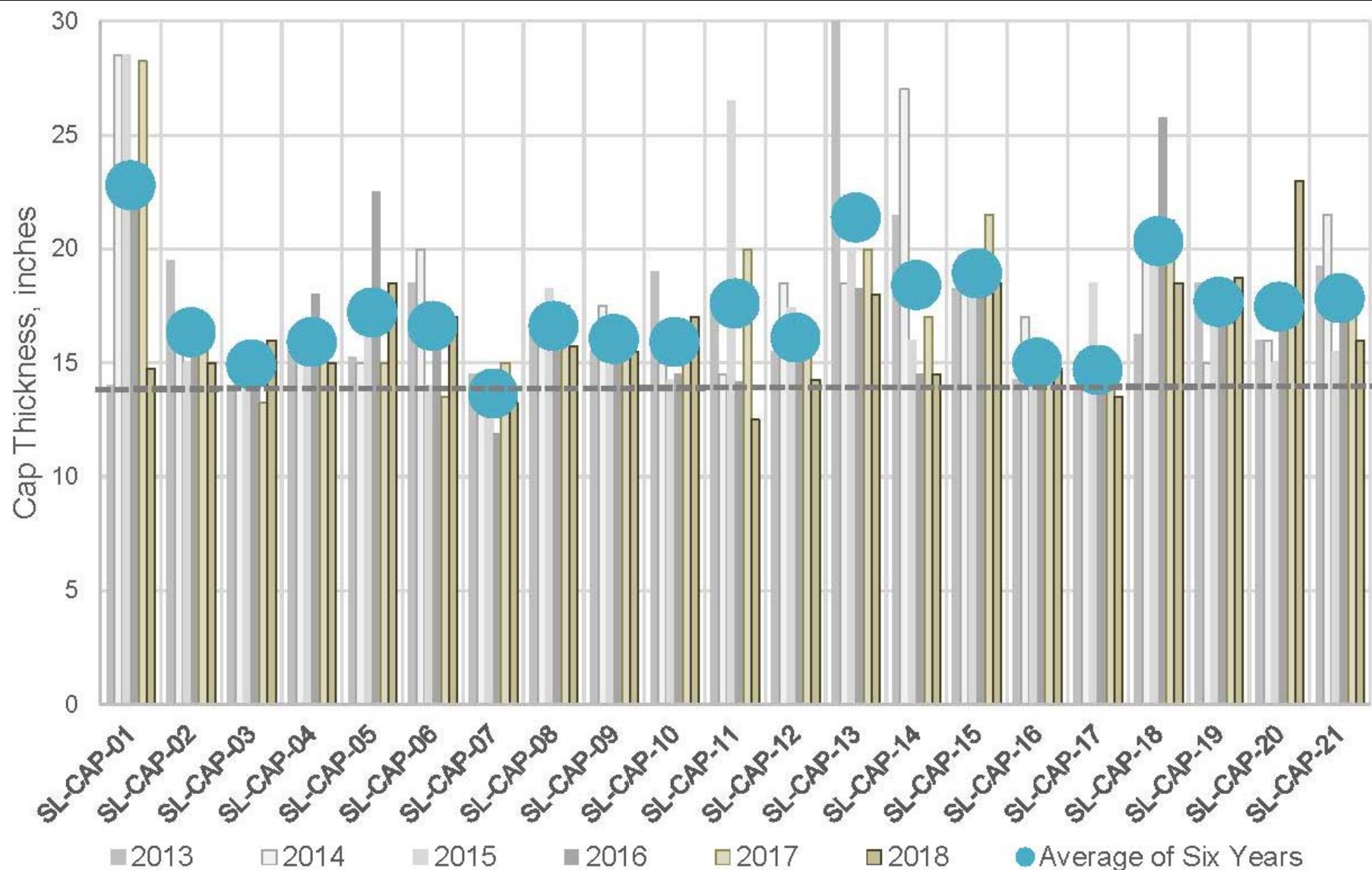
# FIGURES



CITY: SYRACUSE, NY DIV/GRP: EBC-INDV DB: K.SARTORI PM: T.CRIDGE TM: LPUTNAM Lyr:OPTION-0FF-REF  
C:\Users\PA01041\OneDrive - ARCADIS\B360 Docs\GE CORP ENV PROJ\GE SILVER LAKE 2017 PLANNING ASSIST\2018\ALL40152.400201-DWG\SL2018-FIG1-SED CAP INSPECTION-new.dwg LAYOUT: 1  
PLOT STYLE TABLE: ARCADIS - GE.CTB PLOTTED: 10/30/2018 12:06 PM BY: ANJANEYAKUMAR, PAVAN KUMAR  
XREFS: X-BASEMAP





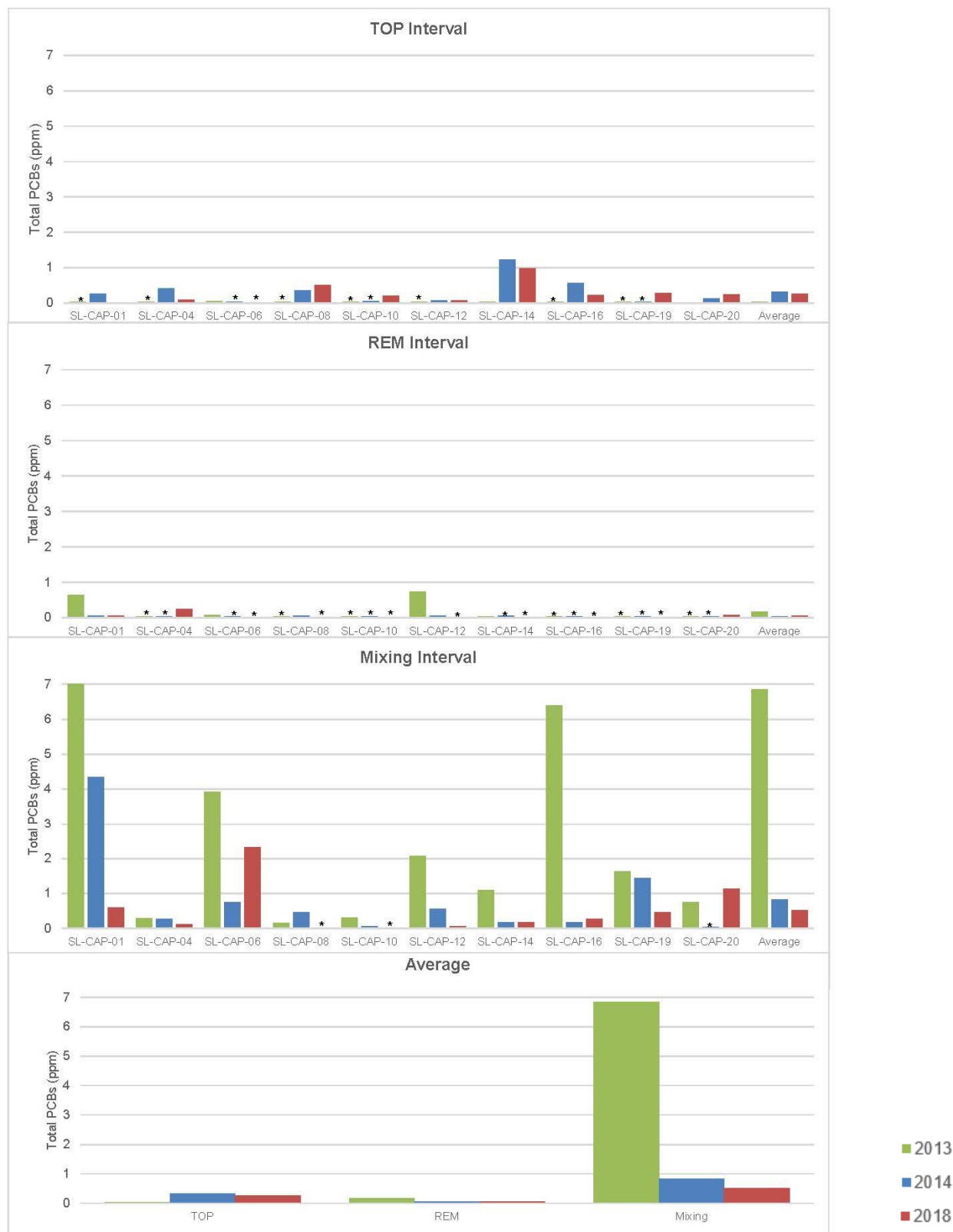


**Notes:**

1. SL-CAP-13 thickness was observed to be 33.5 inches in 2013. Full thickness not shown herein to reduce Y-axis scale.
2. SL-CAP-01 thickness in 2014 was measured after additional cap material was placed around that location.
3. The following data points represent averages of four cores: SL-CAP-07 (2015, 2016), SL-CAP-11 (2016), SL-CAP-12 (2015, 2016), SL-CAP-16 (2015), SL-CAP-17 (2016).
4. See Tables 1 and 4 for additional notes regarding core thickness measurement results.

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS  
**SILVER LAKE AREA**

**SEDIMENT CAP THICKNESS  
RESULTS OVER TIME**



**Notes:**

1. \* indicates analyte was not detected. The concentration indicated represents half the associated reporting limit.
2. The concentration in the Mixing Interval at SL-CAP-01 in 2013 was 51.8 ppm. That full concentration is not shown on the Mixing Interval graph to reduce Y-axis scale.
4. See Tables 2 and 5 for additional notes regarding PCB concentration results.

GENERAL ELECTRIC COMPANY  
PITTSFIELD, MASSACHUSETTS  
**SILVER LAKE AREA**

**SEDIMENT CAP PCB  
RESULTS OVER TIME**



# ATTACHMENT 1



# Attachment 1

## Silver Lake Year 5 (2018) Cap Sampling Data Validation Report

General Electric Company  
Pittsfield, Massachusetts

### 1.0 General

This attachment summarizes the data validation review performed on behalf of the General Electric Company (GE) for samples collected from the Silver Lake cap in September 2018 as part of Year 5 Post-construction cap system monitoring activities performed at Silver Lake, located at the GE-Pittsfield Housatonic River Site in Pittsfield, Massachusetts (the Site). The samples were analyzed for polychlorinated biphenyls (PCBs) by SGS-Accutest in Dayton, New Jersey. Data validation was performed for 30 PCB samples.

### 2.0 Data Evaluation Procedures

This attachment outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- *Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP)*, General Electric Company, Pittsfield, Massachusetts, ARCADIS (Revision 5 submitted by GE on July 2, 2013 and approved by EPA on July 23, 2013);
- Addendum to the FSP/QAPP, General Electric Company, Pittsfield, Massachusetts, Arcadis (submitted on August 23, 2017 and approved by EPA on August 28, 2017); and
- EPA Region I, *EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* (July 1996, revised December 1996) (EPA Region I Guidelines).

The data were validated to Tier I and Tier II levels, as described below. Any deviations from the applicable quality control criteria utilized during the data review process are identified below. A tabulated summary of the Tier I/Tier II data review is presented in Table 1-1. Each sample subject to evaluation is listed in Table 1-1 to document that data review was performed. Samples that required data qualification are listed separately.

The following data qualifiers were used in this data evaluation:

- |         |   |
|---------|---|
| J       | The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL). |
| ND(PQL) | The compound was analyzed for but was not detected at the method detection limit. The sample PQL is presented in parentheses. Non-detect sample results are presented as ND(PQL) in this  |



report for consistency with documents previously prepared for investigations conducted at the GE-Pittsfield/Housatonic River Site.<sup>1</sup>

ND(PQL) J The compound was not detected above the reported sample PQL, but the sample PQL is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required this qualification are presented as ND(PQL) J in this report for consistency with documents previously prepared for investigations conducted at the GE-Pittsfield/Housatonic River Site.<sup>2</sup>

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

### **3.0 Data Validation Procedures**

Section 7.5 of the revised FSP/QAPP states that all analytical data will be validated to a Tier 1 level following the procedures presented in the EPA Region I Guidelines. The Tier I review consisted of a completeness evidence audit to ensure that laboratory data and documentation were present. In the event that data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the EPA Region I Tier I data completeness requirements.

All analytical results from the cap sampling activities described above were also subjected to a Tier II data review. The Tier II data review consisted of a review of data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the EPA Region I Guidelines. Additionally, field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP. A tabulated summary of the samples subject to Tier I and Tier II data review is presented in the following table.

Parameter	Tier I & Tier II			Total
	Samples	Duplicates	Blanks	
PCBs	30	0	0	30
<b>Total</b>	<b>30</b>	<b>0</b>	<b>0</b>	<b>30</b>

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in EPA Region I data validation guidance documents. When the data validation process identified several quality control deficiencies, the cumulative effect of the various deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented in Section 4 below.

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<sup>1</sup> This project specific nomenclature differs from that in EPA guidance, which uses the qualifier U for non-detected compounds.

<sup>2</sup> This project specific nomenclature differs from that in EPA guidance, which uses the qualifier UJ for non-detected compounds in this category.

#### **4.0 Summary of QA/QC Parameter Deviations Requiring Data Qualification**

This section provides a summary of the deviations from the applicable QA/QC criteria that resulted in qualification of results.

Aroclor identification criteria require that the percent difference (%D) between the primary and confirmation column be under 25%. Sample data that did not meet the criteria were qualified as estimated (J). The PCB compounds that did not meet column %D criteria and the number of samples qualified due to those deviations are presented in the following table.

<b>Compounds Qualified Due to Column Percent Difference Deviations</b>			
<b>Analysis</b>	<b>Compounds</b>	<b>Number of Affected Samples</b>	<b>Qualification</b>
PCBs	Aroclor-1248	10	J
	Aroclor-1254	1	J
	Aroclor-1260	6	J
	Total PCBs	12	J

#### **5.0 Overall Data Usability**

This section summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I/II data validation reviews. The percent usability calculation also includes quality control samples (i.e., field/equipment blanks, trip blanks, and field duplicates) to aid in the evaluation of data usability. Data usability is summarized in the following table.

<b>Data Usability</b>		
<b>Parameter</b>	<b>Percent Usability</b>	<b>Rejected Data</b>
PCBs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. Therefore, the following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.

#### **5.1 Precision**

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples



used to evaluate precision included MS/MSD samples. None of the data required qualification due to MS/MSD samples RPD deviations.

## **5.2 Accuracy**

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, MS/MSD samples, LCS samples, and none of the data required qualification due to MS/MSD recovery deviations, LCS recovery deviations or instrument calibration deviations, or surrogate compound recoveries.

## **5.3 Representativeness**

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in the EPA-approved work plans, and by following the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with EPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. For this analytical data set, none of the data required qualification due to representativeness deviations.

## **5.4 Comparability**

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. Specifically, all the cap samples collected in August 2017 were analyzed by EPA SW-846 method 8082 for PCBs.

## **5.5 Completeness**

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses the generation of a sufficient amount of valid data. The actual completeness of this analytical data set was 100%.

Table 1-1  
Analytical Data Validation Summary

Silver Lake  
General Electric Company - Pittsfield, Massachusetts  
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs											
JC74236	SL-CAP-06-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-06-YR5 (1 - 16)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-06-YR5 (16 - 18)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-08-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	Yes	Aroclor-1260	Column %D	36.3%	<25%	0.21 J	
						Total PCBs	Column %D	36.3%	<25%	0.50 J	
JC74236	SL-CAP-08-YR5 (1 - 15)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-08-YR5 (15 - 17)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-10-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-10-YR5 (1 - 16.5)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-10-YR5 (16.5 - 18.5)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-12-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-12-YR5 (1 - 12.5)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-12-YR5 (12.5 - 14.5)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-14-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-14-YR5 (2 - 15)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-14-YR5 (15 - 17)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-16-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	Yes	Aroclor-1254	Column %D	32.1%	<25%	0.23 J	
						Total PCBs	Column %D	32.1%	<25%	0.23 J	
JC74236	SL-CAP-16-YR5 (1 - 13)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-16-YR5 (13 - 15)	9/18/2018	Sediment	Tier II	Yes	Aroclor-1248	Column %D	69.1%	<25%	0.12 J	
						Total PCBs	Column %D	69.1%	<25%	0.27 J	
JC74236	SL-CAP-19-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-19-YR5 (1 - 17)	9/18/2018	Sediment	Tier II	No						
JC74236	SL-CAP-19-YR5 (17 - 19)	9/18/2018	Sediment	Tier II	Yes	Aroclor-1248	Column %D	41.4%	<25%	0.30 J	
						Aroclor-1260	Column %D	35.8%	<25%	0.16 J	
						Total PCBs	Column %D	41.4%,35.8%	<25%	0.46 J	
JC74236	SL-CAP-20-YR5 (0 - 1)	9/18/2018	Sediment	Tier II	Yes	Aroclor-1248	Column %D	29.9%	<25%	0.15 J	
						Aroclor-1260	Column %D	27.7%	<25%	0.084 J	
						Total PCBs	Column %D	29.9%,27.7%	<25%	0.234 J	
						Aroclor-1248	Column %D	43.0%	<25%	0.048 J	
JC74236	SL-CAP-20-YR5 (1 - 22)	9/18/2018	Sediment	Tier II	Yes	Aroclor-1260	Column %D	37.1%	<25%	0.031 J	
						Total PCBs	Column %D	43.0%,37.1%	<25%	0.079 J	
						Aroclor-1248	Column %D	50.7%	<25%	0.52 J	
JC74236	SL-CAP-20-YR5 (22 - 24)	9/18/2018	Sediment	Tier II	Yes	Total PCBs	Column %D	50.7%	<25%	1.13 J	
						Aroclor-1248	Column %D	28.0%	<25%	0.054 J	
JC74236	SL-CAP-04-YR5 (0 - 1)	9/19/2018	Sediment	Tier II	Yes	Total PCBs	Column %D	28.0%	<25%	0.089 J	
						Aroclor-1248	Column %D	42.1%	<25%	0.21 J	
JC74236	SL-CAP-04-YR5 (1 - 14)	9/19/2018	Sediment	Tier II	Yes	Aroclor-1260	Column %D	44.0%	<25%	0.029 J	
						Total PCBs	Column %D	42.1%,44.0%	<25%	0.239 J	
						Aroclor-1248	Column %D	61.0%	<25%	0.057 J	
JC74236	SL-CAP-04-YR5 (14 - 16)	9/19/2018	Sediment	Tier II	Yes	Total PCBs	Column %D	61.0%	<25%	0.116 J	
JC74236	SL-CAP-01-YR5 (0 - 1)	9/19/2018	Sediment	Tier II	No						
JC74236	SL-CAP-01-YR5 (1 - 13)	9/19/2018	Sediment	Tier II	Yes	Aroclor-1248	Column %D	91.1%	<25%	0.026 J	
						Total PCBs	Column %D	91.1%	<25%	0.052 J	
JC74236	SL-CAP-01-YR5 (13 - 15)	9/19/2018	Sediment	Tier II	Yes	Aroclor-1248	Column %D	45.2%	<25%	0.24 J	
						Aroclor-1260	Column %D	27.3%	<25%	0.35 J	
						Total PCBs	Column %D	45.2%,27.3%	<25%	0.59 J	



ATTACHMENT 2



**Attachment 2**  
**2018 Silver Lake Sediment Cap Monitoring EPA Split Sample Results with GE Parent Samples**

**Silver Lake**  
**General Electric Company - Pittsfield, Massachusetts**  
**(Results are in mg/kg)**

Client	Sample Interval	Sample ID	Date Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
EPA	1"-16" Cap Layer	SL-OT000585-0-8S18	9/18/2018	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	0.035	ND(0.020)	0.027	0.062
EPA	1"-16" Cap Layer	SL-OT000585-1-8S18	9/18/2018	ND(0.021)	ND(0.021)	ND(0.021)	ND(0.021)	0.038	ND(0.021)	0.029	0.067
GE	1"-16" Cap Layer (REM)	SL-CAP-06-YR5	9/18/2018	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)	ND(0.038)
EPA	15"-17" Mixing Layer	SL-OT000586-0-8S18	9/18/2018	ND(0.022)	ND(0.022)	ND(0.022)	ND(0.022)	0.037 J <sup>2</sup>	ND(0.022)	0.021 J <sup>1,2</sup>	0.058 J <sup>1,2</sup>
GE	15"-17" Mixing Layer (Mixing)	SL-CAP-08-YR5	9/18/2018	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)
EPA	1"-16.5" Cap Layer	SL-OT000587-0-8S18	9/18/2018	ND(0.024)	ND(0.024)	ND(0.024)	ND(0.024)	0.015 J <sup>1,2</sup>	ND(0.024)	0.016 J <sup>1,2</sup>	0.031 J <sup>1,2</sup>
GE	1"-16.5" Cap Layer (REM)	SL-CAP-10-YR5	9/18/2018	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)	ND(0.047)
EPA	1"-17" Cap Layer	SL-OT000588-0-8S18	9/18/2018	ND(0.020)	ND(0.020)	ND(0.020)	ND(0.020)	0.007 J <sup>1</sup>	ND(0.020)	0.0049 J <sup>1</sup>	0.012 J <sup>1</sup>
GE	1"-17" Cap Layer (REM)	SL-CAP-19-YR5	9/18/2018	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)	ND(0.040)
EPA	22"-24" Mixing Layer	SL-OT000589-0-8S18	9/18/2018	ND(0.24)	ND(0.24)	ND(0.24)	ND(0.24)	2.2	ND(0.020)	1.5	3.7
GE	22"-24" Mixing Layer (Mixing)	SL-CAP-20-YR5	9/18/2018	ND(0.044)	ND(0.044)	ND(0.044)	ND(0.044)	0.52 J	ND(0.044)	0.61	1.13 J

**Notes:**

GE samples were collected by Arcadis and submitted to SGS Environmental Services, Inc. for analysis of PCBs.

Tier II Data Validation was performed on the EPA (Test America Lab) split samples.

ND (0.0094) - Analyte was not detected. The value in parentheses is the associated reporting limit.

J - Indicates an estimated value.

J<sup>1</sup> : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

J<sup>2</sup>: Estimate the positive results for Aroclor 1248 and Total PCBs since the percent RPD between column results exceeded criteria of 25% or less.



# APPENDIX B

## Surface Water Monitoring Data Validation Report



**Attachment 1**  
**Surface Water Monitoring Data Validation Report**  
**2018 Quarterly Surface Water Monitoring Program – Housatonic River**

**General Electric Company**  
**Pittsfield, Massachusetts**

**1.0 General**

This attachment summarizes the data validation review performed on behalf of the General Electric Company (GE) for surface water samples collected from January through October 2018 as part of quarterly surface water sampling activities conducted along the Housatonic River, GE-Pittsfield/Housatonic River Site, located in Pittsfield, Massachusetts. The samples were analyzed for polychlorinated biphenyls (PCBs) and total suspended solids (TSSs) by Eurofins Lancaster Laboratories of Lancaster, Pennsylvania. Data validation was performed for 16 PCB samples and 12 TSS samples.

**2.0 Data Evaluation Procedures**

This attachment outlines the applicable quality control criteria utilized during the data review process and any deviations from those criteria. The data review was conducted in accordance with the following documents:

- *Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP)*, General Electric Company, Pittsfield, Massachusetts, Arcadis (Revision 5 submitted by GE on July 2, 2013 and approved by EPA on July 23, 2013);
- Addendum to the FSP/QAPP, General Electric Company, Pittsfield, Massachusetts, Arcadis (submitted by GE on August 23, 2017 and approved by EPA on August 28, 2017); and
- EPA Region I, *EPA-New England Data Validation Functional Guidelines for Evaluating Environmental Analyses* (July 1996, revised December 1996) (EPA Region I Guidelines).

The data were validated to Tier I and Tier II levels, as described below. Any deviations from the applicable quality control criteria utilized during the data review process are identified below. A tabulated summary of the Tier I/Tier II data review is presented in Table 1-1. Each sample subject to evaluation is listed in Table 1-1 to document that data review was performed. Samples that required data qualification are listed separately.

The following data qualifiers were used in this data evaluation:

- J The compound was positively identified, but the associated numerical value is an estimated concentration. This qualifier is used when the data evaluation procedure identifies a deficiency in the data generation process. This qualifier is also used when a compound is detected at an estimated concentration less than the corresponding practical quantitation limit (PQL).
- ND(PQL) The compound was analyzed for, but was not detected at the method detection limit. The sample PQL is presented in parentheses. Non-detect sample results are presented as



ND(PQL) in this report for consistency with documents previously prepared for investigations conducted at the GE-Pittsfield/Housatonic River Site. <sup>1</sup>

ND(PQL) J The compound was not detected above the reported sample PQL, but the sample PQL is estimated and may or may not represent the actual level of quantitation. Non-detect sample results that required this qualification are presented as ND(PQL) J in this report for consistency with documents previously prepared for investigations conducted at the GE-Pittsfield/Housatonic River Site. <sup>2</sup>

R Indicates that the previously reported detection limit or sample result has been rejected due to a major deficiency in the data generation procedure. The data should not be used for any qualitative or quantitative purpose.

### **3.0 Data Validation Procedures**

Section 7.5 of the revised FSP/QAPP states that all analytical data will be validated to a Tier I level following the procedures presented in the EPA Region I Guidelines. The Tier I review consisted of a completeness evidence audit, as outlined in the *EPA Region I CSF Completeness Evidence Audit Program* (EPA Region I, July 31, 1991), to ensure that laboratory data and documentation were present. In the event that data packages were determined to be incomplete, the missing information was requested from the laboratory. Upon completion of the Tier I review, the data packages complied with the EPA Region I Tier I data completeness requirements.

All analytical results from the surface water sampling activities described above were also subjected to a Tier II data review. The Tier II data review consisted of a review of data package summary forms for identification of quality assurance/quality control (QA/QC) deviations and qualification of the data according to the EPA Region I Guidelines. Additionally, field duplicates were examined for relative percent difference (RPD) compliance with the criteria specified in the FSP/QAPP. A tabulated summary of the samples subject to Tier I and Tier II data review is presented in the following table.

**Summary of Samples Subjected to Tier I and Tier II Data Validation**

Parameter	Tier I Only			Tier I & Tier II			Total
	Samples	Duplicates	Blanks	Samples	Duplicates	Blanks	
PCBs	0	0	0	8	4	4	16
TSSs	0	0	0	8	4	0	12
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>16</b>	<b>8</b>	<b>4</b>	<b>28</b>

When qualification of the sample data was required, the sample results associated with a QA/QC parameter deviation were qualified in accordance with the procedures outlined in EPA Region I Guidelines. When the data validation process identified several quality control deficiencies, the cumulative effect of the various

<sup>1</sup> This project specific nomenclature differs from that in EPA guidance, which uses the qualifier U for non-detected compounds.

<sup>2</sup> This project specific nomenclature differs from that in EPA guidance, which uses the qualifier UJ for non-detected compounds in this category.

deficiencies was employed in assigning the final data qualifier. A summary of the QA/QC parameter deviations that resulted in data qualification is presented in Section 4 below.

#### **4.0 Summary of QA/QC Parameter Deviations Requiring Data Qualification**

This section provides a summary of the deviations from the applicable QA/QC criteria that resulted in qualification of results.

Laboratory control sample/laboratory control sample duplicate (LCS/LCSD) analysis recovery criteria for PCBs are to be within 70% to 130%. The compounds that did not meet LCS/LCSD recovery criteria and the number of samples qualified due to those deviations are presented in the following table.

<b>Compounds Qualified Due to LCS/LCSD Deviations</b>			
<b>Analysis</b>	<b>Compound</b>	<b>Number of Affected Samples</b>	<b>Qualification</b>
PCBs	Aroclor-1016	4	ND(PQL) J
	Aroclor-1221	4	ND(PQL) J
	Aroclor-1232	4	ND(PQL) J
	All Aroclors	2	J
		2	ND(PQL) J

#### **5.0 Overall Data Usability**

This section summarizes the analytical data in terms of its completeness and usability. Data completeness is defined as the percentage of sample results that have been determined to be usable during the data validation process. The percent usability calculation included analyses evaluated under both the Tier I/II data validation reviews. The percent usability calculation also includes quality control samples (i.e., field/equipment blanks, trip blanks, and field duplicates) to aid in the evaluation of data usability. Data usability is summarized in the following table.

<b>Data Usability</b>		
<b>Parameter</b>	<b>Percent Usability</b>	<b>Rejected Data</b>
PCBs	100	None
TSSs	100	None

The data package completeness, as determined from the Tier I data review, was used in combination with the data quality deviations identified during the Tier II data review to determine overall data quality. As specified in the FSP/QAPP, the overall precision, accuracy, representativeness, comparability, and completeness (PARCC) parameters determined from the Tier I and Tier II data reviews were used as indicators of overall data quality. These parameters were assessed through an evaluation of the results of the field and laboratory QA/QC sample analyses to provide a measure of compliance of the analytical data with the Data Quality Objectives (DQOs) specified in the FSP/QAPP. The following sections present summaries of the PARCC parameters assessment with regard to the DQOs specified in the FSP/QAPP.



### **5.1 Precision**

Precision measures the reproducibility of measurements under a given set of conditions. Specifically, it is a quantitative measure of the variability of a group of measurements compared to their average value. For this investigation, precision was defined as the RPD between duplicate sample results. The duplicate samples used to evaluate precision included field duplicates, MS/MSD samples, and LCS/LCSD samples. None of the data required qualification due to field duplicate recovery deviations, MS/MSD RPD, or LCS/LCSD sample RPD deviations.

### **5.2 Accuracy**

Accuracy measures the bias in an analytical system or the degree of agreement of a measurement with a known reference value. For this investigation, accuracy was defined as the percent recovery of QA/QC samples that were spiked with a known concentration of an analyte or compound of interest. The QA/QC samples used to evaluate analytical accuracy included instrument calibration, LCS/LCSD samples, MS/MSD samples, and recoveries. For this analytical program, 12.3% of the data required qualification due to LCS/LCSD deviations. None of the data required qualification due to instrument calibration deviations, MS/MSD, or surrogate compound recovery deviations.

### **5.3 Representativeness**

Representativeness expresses the degree to which sample data accurately and precisely represents a characteristic of a population, parameter variations at a sampling point, or an environmental condition. Representativeness is a qualitative parameter, which is most concerned with the proper design of the sampling program. The representativeness criterion is best satisfied by making certain that sampling locations are selected properly and a sufficient number of samples are collected. This parameter has been addressed by collecting samples at locations specified in the EPA-approved work plans, and by following the procedures for sample collection/analyses that were described in the FSP/QAPP. Additionally, the analytical program used procedures consistent with EPA-approved analytical methodology. A QA/QC parameter that is an indicator of the representativeness of a sample is holding time. Holding time criteria are established to maintain the samples in a state that is representative of the in-situ field conditions before analysis. None of the data required qualification due to holding time deviations.

### **5.4 Comparability**

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared with another. This goal was achieved through the use of the standardized techniques for sample collection and analysis presented in the FSP/QAPP. Specifically, all the surface water samples collected between January and October 2018 were analyzed by EPA SW-846 method 8082 for PCBs and 2540D for TSSs.

### **5.5 Completeness**

Completeness is defined as the percentage of measurements that are judged to be valid or usable to meet the prescribed DQOs. The completeness criterion is essentially the same for all data uses -- the generation of a sufficient amount of valid data. The actual completeness of this analytical data set was 100%.

Table 1-1  
Analytical Data Validation Summary

2018 Surface Water Monitoring Data Validation Report  
General Electric Company - Pittsfield, Massachusetts  
(Results are presented in parts per million, ppm)

Sample Delivery Group No.	Sample ID	Lab Sample ID	Date Collected	Matrix	Validation Level	Qualification	Compound	QA/QC Parameter	Value	Control Limits	Qualified Result	Notes
PCBs												
CAP77-1936501_v1	HR-EB1	9578876	4/25/2018	Water	Tier II	Yes	Aroclor-1016	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
							Aroclor-1221	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
							Aroclor-1232	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
							Total PCBs	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
CAP77-1936501_v1	LOCATION-6A	9578871	4/25/2018	Water	Tier II	Yes	Aroclor-1016	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	
							Aroclor-1221	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	
							Aroclor-1232	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	
							Total PCBs	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	
CAP77-1936501_v1	HR-D1	9578875	4/25/2018	Water	Tier II	Yes	Aroclor-1016	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	Duplicate of LOCATION-4A
							Aroclor-1221	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	
							Aroclor-1232	LCS %R	63.0%	70% to 130%	ND(0.0000094) J	
							Total PCBs	LCS %R	63.0%	70% to 130%	0.0000089 J	
CAP77-1936501_v1	LOCATION-4A	9578874	4/25/2018	Water	Tier II	Yes	Aroclor-1016	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
							Aroclor-1221	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
							Aroclor-1232	LCS %R	63.0%	70% to 130%	ND(0.0000095) J	
							Total PCBs	LCS %R	63.0%	70% to 130%	0.0000091 J	
NGC10-1901494_v1	HR-EB1	9426111	1/25/2018	Water	Tier II	No						
NGC10-1901494_v1	LOCATION-6A	9426106	1/25/2018	Water	Tier II	No						
NGC10-1901494_v1	HR-D1	9426110	1/25/2018	Water	Tier II	No						Duplicate of LOCATION-4A
NGC10-1901494_v1	LOCATION-4A	9426109	1/25/2018	Water	Tier II	No						
NGC13-1969996_v1	HR-EB1	9722786	7/25/2018	Water	Tier II	No						
NGC13-1969996_v1	LOCATION-6A	9722781	7/25/2018	Water	Tier II	No						
NGC13-1969996_v1	HR-D1	9722785	7/25/2018	Water	Tier II	No						Duplicate of LOCATION-4A
NGC13-1969996_v1	LOCATION-4A	9722784	7/25/2018	Water	Tier II	No						
NGC16-2004720_v1	HR-EB1	9878955	10/30/2018	Water	Tier II	No						
NGC16-2004720_v1	Location-6A	9878950	10/30/2018	Water	Tier II	No						
NGC16-2004720_v1	HR-D1	9878954	10/30/2018	Water	Tier II	No						Duplicate of LOCATION-4A
NGC16-2004720_v1	Location-4A	9878953	10/30/2018	Water	Tier II	No						
TSSs												
CAP77-1936501_v1	LOCATION-6A	9578871	4/25/2018	Water	Tier II	No						
CAP77-1936501_v1	HR-D1	9578875	4/25/2018	Water	Tier II	No						Duplicate of LOCATION-4A
CAP77-1936501_v1	LOCATION-4A	9578874	4/25/2018	Water	Tier II	No						
NGC10-1901494_v1	LOCATION-6A	9426106	1/25/2018	Water	Tier II	No						
NGC10-1901494_v1	HR-D1	9426110	1/25/2018	Water	Tier II	No						Duplicate of LOCATION-4A
NGC10-1901494_v1	LOCATION-4A	9426109	1/25/2018	Water	Tier II	No						
NGC13-1969996_v1	LOCATION-6A	9722781	7/25/2018	Water	Tier II	No						
NGC13-1969996_v1	HR-D1	9722785	7/25/2018	Water	Tier II	No						Duplicate of LOCATION-4A
NGC13-1969996_v1	LOCATION-4A	9722784	7/25/2018	Water	Tier II	No						
NGC16-2004720_v1	Location-6A	9878950	10/30/2018	Water	Tier II	No						
NGC16-2004720_v1	HR-D1	9878954	10/30/2018	Water	Tier II	No						Duplicate of LOCATION-4A
NGC16-2004720_v1	Location-4A	9878953	10/30/2018	Water	Tier II	No						



# APPENDIX C

Surface Water Monitoring – EPA Split Sampling Result



**Table 1**  
**Silver Lake\* Surface Water Data - 2018 Split Sampling - PCB Aroclors**  
**GE-Pittsfield/Housatonic River - Pittsfield, MA**

Results are in µg/L

Client	Lab	Sample ID	Date Collected	Aroclor 1016	Aroclor 1221	Aroclor 1232	Aroclor 1242	Aroclor 1248	Aroclor 1254	Aroclor 1260	Total PCBs
EPA	Test America	SL-SW000059-0-8J25	1/25/2018	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)
GE	Eurofins	Location 4A	1/25/2018	ND(0.0098)	ND(0.0098)	ND(0.0098)	ND(0.0098)	ND(0.0098)	ND(0.0098)	ND(0.0098)	ND(0.0098)
GE	Eurofins	Location 4A (Duplicate)	1/25/2018	ND(0.0097)	ND(0.0097)	ND(0.0097)	ND(0.0097)	ND(0.0097)	ND(0.0097)	ND(0.0097)	ND(0.0097)
EPA	Test America	SL-SW000059-0-8A25	4/25/2018	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)
EPA	Test America	SL-SW000059-1-8A25 (Duplicate)	4/25/2018	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)
GE	Eurofins	Location 4A	4/25/2018	ND(0.0095 J)	ND(0.0095 J)	ND(0.0095 J)	ND(0.0095)	ND(0.0095)	0.0091 J	ND(0.0095)	0.0091 J
GE	Eurofins	Location 4A (Duplicate)	4/25/2018	ND(0.0094 J)	ND(0.0094 J)	ND(0.0094 J)	ND(0.0094)	ND(0.0094)	0.0089 J	ND(0.0094)	0.0089 J
EPA	Test America	SL-SW000059-0-8L25	7/25/2018	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)
GE	Eurofins	Location 4A	7/25/2018	ND(0.0092)	ND(0.0092)	ND(0.0092)	ND(0.0092)	ND(0.0092)	ND(0.0092)	0.0081 J	0.0081 J
GE	Eurofins	Location 4A (Duplicate)	7/25/2018	ND(0.0092)	ND(0.0092)	ND(0.0092)	ND(0.0092)	ND(0.0092)	ND(0.0092)	0.008J	0.008J
EPA	Test America	SL-SW000059-0-8O30	10/30/2018	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)	ND(0.0094)
GE	Eurofins	Location 4A	10/30/2018	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	0.0067 J	0.0067 J
GE	Eurofins	Location 4A (Duplicate)	10/30/2018	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)	ND(0.0095)

Notes:

\* - Silver Lake samples collected from outlet channel of lake.

Tier II Data Validation was performed on the EPA (Test America) split samples.

ND (0.0094) - Analyte was not detected. The value in parentheses is the associated reporting limit.

J - Indicates an estimated value.



**ESAT Generated Data Summary Table - Validated Results**

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8J25 Silver Lake Field Sample Surface Water 1/25/2018 1.0 N/A pg/L				SL-SW000059-0-8A25 Silver Lake Field Sample Surface Water 4/25/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL
1	PCB-1	10000		190	10.9	8000		190	3.90
1	PCB-2	190	U	190	7.96	190	U	190	3.16
1	PCB-3	418		190	7.77	346		190	3.45
2	PCB-4	33200	J <sup>1</sup>	190	29.4	33700	J <sup>1</sup>	190	8.93
2	PCB-5	190	U	190	8.53	190	U	190	10.4
2	PCB-6	994		190	8.93	1010		190	10.8
2	PCB-7	78.3	J	190	8.54	106	J	190	10.4
2	PCB-8	481		190	8.73	505		190	10.7
2	PCB-9	209		190	8.87	227		190	11.4
2	PCB-10	2390		190	19.5	2910		190	6.51
2	PCB-11	136	J	190	8.59	78.8	J	190	10.3
2	PCB-12/13	169	J	381	8.55	300	J	380	10.5
2	PCB-14	190	U	190	7.49	190	U	190	9.14
2	PCB-15	179	J	190	8.33	386		190	11.8
3	PCB-16	28.3	J	190	4.86	49.1	J	190	4.29
3	PCB-17	1030		190	3.65	2770		190	3.32
3	PCB-18/30	527		381	3.21	1190		380	2.87
3	PCB-19	3780		190	4.07	6940		190	3.60
3	PCB-20/28	116	J	381	4.89	266	J	380	9.22
3	PCB-21/33	381	U	381	4.63	380	U	380	8.63
3	PCB-22	190	U	190	5.03	190	U	190	9.60
3	PCB-23	190	U	190	4.72	190	U	190	8.81
3	PCB-24	190	U	190	2.92	190	U	190	2.56
3	PCB-25	260		190	4.73	637		190	8.87
3	PCB-26/29	562		381	4.72	1370		380	8.81
3	PCB-27	1650		190	2.78	3930		190	2.51
3	PCB-31	194		190	4.46	459		190	8.61
3	PCB-32	216		190	2.66	613		190	2.35
3	PCB-34	6.58	J	190	4.89	16.4	J	190	9.16
3	PCB-35	190	U	190	4.94	190	U	190	9.22
3	PCB-36	190	U	190	4.58	190	U	190	8.50
3	PCB-37	9.99	J	190	5.40	25.8	J	190	11.0
3	PCB-38	190	U	190	5.04	190	U	190	9.36
3	PCB-39	190	U	190	4.46	190	U	190	8.36
4	PCB-40/71	65.7	J	381	0.68	205	J	380	28.9
4	PCB-41	190	U	190	0.79	190	U	190	39.2
4	PCB-42	42.6	J	190	0.74	119	J	190	32.5
4	PCB-43	13.2	J	190	0.81	39.1	J	190	33.0
4	PCB-44/47/65	569	J	571	0.64	1750		571	28.3
4	PCB-45	190	U	190	0.77	190	U	190	30.5
4	PCB-46	40.6	J	190	0.80	113	J	190	35.6
4	PCB-48	190	U	190	0.68	190	U	190	30.0
4	PCB-49/69	594		381	0.56	1700		380	24.8
4	PCB-50/53	501		381	0.65	1310		380	29.3
4	PCB-51	165	J	190	0.64	716		190	31.3
4	PCB-52	781		190	0.68	2080		190	31.5
4	PCB-54	69.5	J	190	0.81	219		190	0.38
4	PCB-55	190	U	190	1.40	190	U	190	2.67
4	PCB-56	12.1	J	190	1.46	12.7	J	190	2.75
4	PCB-57	9.26	J	190	1.40	35.8	J	190	2.66
4	PCB-58	190	U	190	9.14	190	U	190	2.60
4	PCB-59/62/75	63.1	J	571	0.50	148	J	571	22.1
4	PCB-60	4.36	J	190	1.40	190	U	190	2.68
4	PCB-61/70/74/76	104	J	761	1.36	172	J	761	2.55
4	PCB-63	11.2	J	190	1.25	36.1	J	190	2.36

**ESAT Generated Data Summary Table - Validated Results**

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8J25 Silver Lake Field Sample Surface Water 1/25/2018 1.0 N/A pg/L				SL-SW000059-0-8A25 Silver Lake Field Sample Surface Water 4/25/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL
4	PCB-64	29.2	J	190	0.48	46.0	J	190	20.7
4	PCB-66	67.1	J	190	1.43	154	J	190	2.70
4	PCB-67	4.64	J	190	1.31	11.3	J	190	2.49
4	PCB-68	20.4	J	190	1.23	74.8	J	190	2.37
4	PCB-72	20.4	J	190	1.32	66.7	J	190	2.53
4	PCB-73	25.4	J	190	0.51	78.5	J	190	23.6
4	PCB-77	9.55	J	19.0	1.45	19.0	U	19.0	3.51
4	PCB-78	190	U	190	1.42	190	U	190	2.64
4	PCB-79	2.48	J	190	1.26	190	U	190	2.34
4	PCB-80	190	U	190	2.40	190	U	190	2.29
4	PCB-81	19.0	U	19.0	1.42	19.0	U	19.0	3.45
5	PCB-82	23.2	J	190	7.51	13.9	J	190	10.1
5	PCB-83	190	U	190	8.14	28.6	J	190	9.17
5	PCB-84	68.4	J	190	6.98	117	J	190	9.37
5	PCB-85/116/117	49.4	J	571	5.20	61.9	J	571	6.73
5	PCB-86/87/97/108/ 119/125	161	J	1140	5.41	191	J	1140	6.91
5	PCB-88/91	65.0	J	381	5.98	186	J	380	7.84
5	PCB-89	190	U	190	6.56	190	U	190	8.65
5	PCB-90/101/113	309	J	571	5.48	485	J	571	6.94
5	PCB-92	92.8	J	190	6.33	249		190	8.26
5	PCB-93/100	17.9	J	381	5.94	88.1	J	380	7.96
5	PCB-94	190	U	190	6.27	54.5	J	190	8.29
5	PCB-95	227		190	5.94	333		190	7.77
5	PCB-96	5.16	J	190	0.56	17.8	J	190	0.70
5	PCB-98/102	10.0	J	381	5.80	48.2	J	380	7.67
5	PCB-99	133	J	190	5.09	243		190	7.36
5	PCB-103	14.2	J	190	5.46	53.4	J	190	7.20
5	PCB-104	1.83	J	190	0.56	6.58	J	190	0.47
5	PCB-105	96.2		19.0	5.15	48.2		19.0	7.74
5	PCB-106	190	U	190	4.96	190	U	190	5.89
5	PCB-107/124	9.22	J	381	4.83	380	U	380	6.02
5	PCB-109	19.6	J	190	4.53	32.4	J	190	5.70
5	PCB-110/115	362	J	381	4.78	340	J	380	6.11
5	PCB-111	190	U	190	4.66	190	U	190	5.78
5	PCB-112	190	U	190	4.84	190	U	190	6.07
5	PCB-114	19.0	U	19.0	5.20	19.0	U	19.0	7.30
5	PCB-118	240		19.0	4.76	216		19.0	7.10
5	PCB-120	190	U	190	4.46	190	U	190	5.62
5	PCB-121	190	U	190	4.44	190	U	190	5.68
5	PCB-122	190	U	190	5.24	190	U	190	6.75
5	PCB-123	19.0	U	19.0	4.95	19.0	U	19.0	7.27
5	PCB-126	8.06	J	19.0	5.62	19.0	U	19.0	8.42
5	PCB-127	190	U	190	4.93	190	U	190	6.13
6	PCB-128/166	73.8	J	381	2.61	35.5	J	380	5.02
6	PCB-129/138/163	538	J	571	2.77	490	J	571	6.65
6	PCB-130	31.2	J	190	3.49	20.9	J	190	6.50
6	PCB-131	190	U	190	3.19	190	U	190	6.20
6	PCB-132	135	J	190	3.16	101	J	190	6.17
6	PCB-133	8.61	J	190	3.13	19.3	J	190	6.06
6	PCB-134/143	24.1	J	381	3.24	22.0	J	380	6.25
6	PCB-135/151	150	J	381	2.93	181	J	380	5.82
6	PCB-136	48.1	J	190	2.17	53.9	J	190	4.32
6	PCB-137	17.6	J	190	2.61	17.7	J	190	5.51
6	PCB-139/140	7.08	J	381	2.82	380	U	380	5.40
6	PCB-141	93.5	J	190	3.10	37.8	J	190	5.76



**ESAT Generated Data Summary Table - Validated Results**

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8J25 Silver Lake Field Sample Surface Water 1/25/2018 1.0 N/A pg/L				SL-SW000059-0-8A25 Silver Lake Field Sample Surface Water 4/25/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL
6	PCB-142	190	U	190	3.32	190	U	190	6.37
6	PCB-144	18.5	J	190	2.83	190	U	190	5.58
6	PCB-145	190	U	190	2.13	190	U	190	4.24
6	PCB-146	71.8	J	190	2.69	96.1	J	190	5.42
6	PCB-147/149	355	J	381	2.84	381		380	5.47
6	PCB-148	190	U	190	2.83	190	U	190	5.52
6	PCB-150	190	U	190	1.99	190	U	190	3.94
6	PCB-152	190	U	190	2.06	190	U	190	4.05
6	PCB-153/168	419		381	2.40	340	J	380	4.49
6	PCB-154	7.58	J	190	2.56	22.5	J	190	4.74
6	PCB-155	190	U	190	1.83	190	U	190	3.69
6	PCB-156/157	53.4		38.1	1.21	35.3	J	38.0	1.25
6	PCB-158	48.7	J	190	2.17	23.0	J	190	4.09
6	PCB-159	4.34	J	190	0.86	3.11	J	190	0.95
6	PCB-160	190	U	190	2.67	190	U	190	2.99
6	PCB-161	190	U	190	2.47	190	U	190	4.27
6	PCB-162	1.92	J	190	0.82	190	U	190	0.93
6	PCB-164	39.2	J	190	2.56	13.5	J	190	4.38
6	PCB-165	190	U	190	2.53	190	U	190	4.70
6	PCB-167	22.9		19.0	0.71	15.2	J	19.0	1.06
6	PCB-169	7.32	J	19.0	0.93	19.0	U	19.0	0.96
7	PCB-170	118	J	190	0.66	102	J	190	3.40
7	PCB-171/173	37.8	J	381	0.68	30.4	J	380	3.32
7	PCB-172	22.4	J	190	0.66	23.2	J	190	3.25
7	PCB-174	136	J	190	0.72	110	J	190	3.36
7	PCB-175	5.13	J	190	1.08	4.49	J	190	0.87
7	PCB-176	15.2	J	190	0.78	10.6	J	190	0.61
7	PCB-177	73.3	J	190	0.67	80.9	J	190	3.34
7	PCB-178	25.9	J	190	1.14	29.8	J	190	0.90
7	PCB-179	46.4	J	190	0.83	45.1	J	190	0.66
7	PCB-180/193	267	J	381	0.55	241	J	380	2.68
7	PCB-181	190	U	190	0.59	190	U	190	2.96
7	PCB-182	190	U	190	1.02	0.91	J	190	0.81
7	PCB-183	61.7	J	190	0.52	67.0	J	190	2.84
7	PCB-184	190	U	190	0.86	190	U	190	0.68
7	PCB-185	12.9	J	190	0.63	190	U	190	2.90
7	PCB-186	190	U	190	0.82	190	U	190	0.64
7	PCB-187	147	J	190	1.02	143	J	190	0.82
7	PCB-188	190	U	190	0.76	190	U	190	0.87
7	PCB-189	7.70	J	19.0	0.64	5.53	J	19.0	0.62
7	PCB-190	22.1	J	190	0.48	21.4	J	190	2.33
7	PCB-191	4.44	J	190	0.49	190	U	190	2.41
7	PCB-192	190	U	190	0.52	190	U	190	2.51
8	PCB-194	45.2	J	190	0.62	53.4	J	190	0.82
8	PCB-195	18.2	J	190	0.66	20.1	J	190	0.85
8	PCB-196	23.5	J	190	0.66	26.5	J	190	0.79
8	PCB-197	1.48	J	190	0.46	2.86	J	190	0.55
8	PCB-198/199	54.5	J	381	0.70	54.7	J	380	0.82
8	PCB-200	6.61	J	190	0.56	4.45	J	190	0.59
8	PCB-201	6.71	J	190	0.50	5.87	J	190	0.56
8	PCB-202	9.43	J	190	0.53	10.9	J	190	0.68
8	PCB-203	33.5	J	190	0.66	29.3	J	190	0.74
8	PCB-204	190	U	190	0.52	190	U	190	0.59
8	PCB-205	5.92	J	190	0.53	190	U <sup>2</sup>	190	0.63
9	PCB-206	24.4	J	190	1.02	190	U <sup>2</sup>	190	1.21
9	PCB-207	2.18	J	190	0.68	2.16	J	190	0.73

# ESAT Generated Data Summary Table - Validated Results

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.:		SL-SW000059-0-8J25				SL-SW000059-0-8A25			
Sample Location:		Silver Lake				Silver Lake			
Sample Type:		Field Sample				Field Sample			
Matrix:		Surface Water				Surface Water			
Collection Date:		1/25/2018				4/25/2018			
Dilution Factor:		1.0				1.0			
% Moisture:		N/A				N/A			
Units:		pg/L				pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL
9	PCB-208	8.12	J	190	0.73	3.56	J	190	0.79
10	PCB-209	13.3	J	190	0.90	190	U <sup>2</sup>	190	0.74
	Total MoCB	10400				8350			
	Total DiCB	37800	J			39200	J		
	Total TrCB	8380	J			18300	J		
	Total TeCB	3220	J			9090	J		
	Total PeCB	1910	J			2810	J		
	Total HxCB	2180	J			1910	J		
	Total HpCB	1000	J			915	J		
	Total OcCB	205	J			208	J		
	Total NoCB	34.7	J			5.72	J		
	DeCB	13.3	J			ND			
	Total PCBs <sup>^</sup>	65200	J			80800	J		
	Total TEQ#	1.04	J			0.0096	J		

## TIER 2/S4VM DATA VALIDATION QUALIFIER COMMENTS:

EDL - Estimated Detection Limit. For Congener Method 1668A it is typical to report the EDL rather than an MDL. The EDL is a sample-specific detection limit based on the noise present in the sample at the retention time of an undetected analyte, and is more representative of what can be detected in that sample. EDL is the concentration of a given analyte required to produce a signal with a peak height of at least 2.5 times the background noise level.

<sup>^</sup> Total PCBs are the sum of the total homologues.

# The Toxic Equivalent concentrations are calculated with the Toxicity Equivalency Factors (TEFs) found in "The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds, Society of Toxicology, July 7, 2006. The TE values are calculated using the final validated data and include the positive results and estimated values. The TE values are estimated (J) when any individual congener is estimated. The TE calculations do not include RL values.

J - Sample concentrations reported below the laboratory reporting limit are flagged (J) on the Data Summary Table as estimated values with no superscripts.

<sup>1</sup> Sample concentration exceeds the instrument calibration range; estimate (J) the result for PCB 4 in sample SL-SW000059-0-8J25 and sample SL-SW000059-0-8A25.

<sup>2</sup> Blank contamination; the positive results for PCB 205, PCB 206, and PCB 209 in the affected samples that are less than the RL are reported as non-detects (U) at the RL.



**ESAT Generated Data Summary Table - Validated Results**

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8L25 Silver Lake Field Sample Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-1-8L25 Silver Lake Field Duplicate Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-0-8O30 Silver Lake Field Sample Surface Water 10/30/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL	Result	Flag	RL	EDL
1	PCB-1	12300		191	43.0	12600		190	58.7	10000		190	22.3
1	PCB-2	191	U <sup>4</sup>	191	34.4	190	U <sup>4</sup>	190	46.0	190	U	190	18.3
1	PCB-3	829		191	38.9	843		190	51.0	337		190	21.2
2	PCB-4	67300	J <sup>1</sup>	191	105	67400	J <sup>1</sup>	190	90.3	41600	J <sup>1</sup>	190	6.43
2	PCB-5	25.2	J	191	16.9	25.2	J	190	22.5	190	U	190	9.15
2	PCB-6	1900		191	17.8	1940		190	23.7	1060		190	9.64
2	PCB-7	319		191	16.5	319		190	21.9	148	J	190	8.89
2	PCB-8	1030		191	17.4	1050		190	23.2	628		190	9.42
2	PCB-9	463		191	17.9	472		190	23.9	239		190	9.69
2	PCB-10	3870		191	61.3	3960		190	54.4	3030		190	4.35
2	PCB-11	191	U <sup>3</sup>	191	17.9	190	U <sup>3</sup>	190	23.8	190	U <sup>3</sup>	190	9.68
2	PCB-12/13	808		382	18.1	794		380	24.1	334	J	381	9.78
2	PCB-14	191	U	191	15.1	190	U	190	20.2	190	U	190	8.18
2	PCB-15	826		191	19.6	839		190	26.5	464		190	11.6
3	PCB-16	191	U	191	28.6	190	U	190	30.9	190	U	190	6.91
3	PCB-17	4750		191	21.8	4990		190	23.5	3080		190	5.27
3	PCB-18/30	1170		382	18.5	1210		380	20.0	1120		381	4.48
3	PCB-19	19500	J <sup>1</sup>	191	27.8	19800	J <sup>1</sup>	190	32.4	8060		190	5.81
3	PCB-20/28	502		382	18.3	521		380	19.9	314	J	381	10.4
3	PCB-21/33	382	U	382	17.5	43.8	J <sup>2</sup>	380	19.0	381	U	381	9.97
3	PCB-22	191	U	191	19.4	190	U	190	21.1	190	U	190	11.1
3	PCB-23	191	U	191	17.2	190	U	190	18.7	190	U	190	9.81
3	PCB-24	191	U	191	17.1	38.5	J	190	18.4	190	U	190	4.13
3	PCB-25	1570		191	17.5	1660		190	19.0	831		190	9.96
3	PCB-26/29	2200		382	17.4	2280		380	18.9	1430		381	9.94
3	PCB-27	7630		191	16.8	7770		190	18.1	4540		190	4.06
3	PCB-31	659		191	17.0	693		190	18.4	475		190	9.68
3	PCB-32	969		191	15.7	1040		190	16.9	661		190	3.79
3	PCB-34	44.0	J	191	18.1	45.5	J	190	19.6	20.3	J	190	10.3
3	PCB-35	191	U	191	20.2	190	U	190	21.9	190	U	190	11.5
3	PCB-36	191	U	191	17.7	190	U	190	19.2	190	U	190	10.1
3	PCB-37	47.9	J	191	23.7	49.2	J	190	24.5	38.3	J	190	15.2
3	PCB-38	191	U	191	19.6	190	U	190	21.3	190	U	190	11.2
3	PCB-39	191	U	191	18.0	190	U	190	19.6	190	U	190	10.3
4	PCB-40/71	298	J	382	37.3	341	J	380	39.5	199	J	381	25.3
4	PCB-41	191	U	191	52.8	190	U	190	55.8	190	U	190	35.8
4	PCB-42	143	J	191	42.1	153	J	190	44.5	118	J	190	28.6
4	PCB-43	191	U	191	48.7	190	U	190	51.5	44.3	J	190	33.0
4	PCB-44/47/65	2830		572	36.9	2930		571	39.0	1790		571	25.0
4	PCB-45	173	J	191	43.6	252		190	46.2	190	U	190	29.6
4	PCB-46	159	J	191	46.9	163	J	190	49.6	128	J	190	31.8
4	PCB-48	191	U	191	39.0	190	U	190	41.3	190	U	190	26.5
4	PCB-49/69	2330		382	32.1	2470		380	34.0	1700		381	21.8
4	PCB-50/53	2140		382	35.6	2270		380	37.7	1430		381	24.2
4	PCB-51	1140		191	36.1	1130		190	38.2	658		190	24.5
4	PCB-52	2710		191	41.6	2840		190	44.0	2070		190	28.2
4	PCB-54	713		191	0.57	623	J <sup>2</sup>	190	0.61	302		190	0.49
4	PCB-55	191	U	191	3.32	190	U	190	4.04	190	U	190	2.23
4	PCB-56	24.1	J	191	3.46	23.4	J	190	4.22	12.1	J	190	2.33
4	PCB-57	86.7	J	191	3.24	99.7	J	190	3.94	39.7	J	190	2.18
4	PCB-58	191	U	191	3.17	190	U	190	3.86	190	U	190	2.13
4	PCB-59/62/75	140	J	572	28.1	152	J	571	29.7	149	J	571	19.1
4	PCB-60	6.73	J	191	3.43	4.80	J <sup>2</sup>	190	4.18	3.50	J	190	2.30
4	PCB-61/70/74/76	264	J	763	3.13	280	J	761	3.82	156	J	761	2.11
4	PCB-63	71.6	J	191	2.88	77.0	J	190	3.51	40.4	J	190	1.94

**ESAT Generated Data Summary Table - Validated Results**

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8L25 Silver Lake Field Sample Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-1-8L25 Silver Lake Field Duplicate Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-0-8O30 Silver Lake Field Sample Surface Water 10/30/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL	Result	Flag	RL	EDL
4	PCB-64	48.6	J	191	27.4	53.0	J	190	29.0	48.4	J	190	18.6
4	PCB-66	267		191	3.36	287		190	4.10	155	J	190	2.26
4	PCB-67	14.2	J	191	2.98	12.9	J <sup>2</sup>	190	3.63	11.6	J	190	2.00
4	PCB-68	137	J	191	2.79	151	J	190	3.40	71.2	J	190	1.87
4	PCB-72	118	J	191	2.99	125	J	190	3.65	66.7	J	190	2.01
4	PCB-73	130	J	191	28.5	135	J	190	30.2	72.2	J	190	19.4
4	PCB-77	10.5	J	19.1	4.55	9.23	J	19.0	5.59	5.30	J <sup>2</sup>	19.0	3.28
4	PCB-78	191	U	191	3.82	190	U	190	4.66	190	U	190	2.57
4	PCB-79	9.50	J	191	3.33	7.23	J	190	4.05	190	U	190	2.24
4	PCB-80	191	U	191	2.92	190	U	190	3.56	190	U	190	1.96
4	PCB-81	19.1	U	19.1	4.38	19.0	U	19.0	5.40	19.0	U	19.0	3.25
5	PCB-82	19.1	J <sup>2</sup>	191	8.20	20.0	J	190	9.28	190	U	190	7.25
5	PCB-83	71.3	J	191	7.99	93.7	J	190	9.04	30.4	J	190	7.06
5	PCB-84	143	J	191	6.98	141	J	190	7.91	124	J	190	6.17
5	PCB-85/116/117	95.2	J	572	5.32	104	J	571	6.02	75.4	J	571	4.70
	PCB-86/87/97/108/ 119/125	279	J	1140	5.33	297	J	1140	6.03	197	J	1140	4.71
5	PCB-88/91	282	J	382	5.82	296	J	380	6.58	199	J	381	5.14
5	PCB-89	191	U	191	6.59	190	U	190	7.46	190	U	190	5.83
5	PCB-90/101/113	723		572	5.35	750		571	6.05	477	J	571	4.73
5	PCB-92	363		191	6.46	368		190	7.31	266		190	5.71
5	PCB-93/100	128	J	382	5.77	150	J	380	6.54	85.0	J	381	5.10
5	PCB-94	99.8	J	191	6.36	109	J	190	7.20	60.8	J	190	5.62
5	PCB-95	402		191	5.99	443		190	6.78	344		190	5.30
5	PCB-96	26.6	J	191	0.25	27.4	J	190	0.26	19.2	J	190	0.64
5	PCB-98/102	78.9	J	382	5.51	81.5	J	380	6.24	56.1	J	381	4.87
5	PCB-99	299		191	5.47	290		190	6.20	232		190	4.84
5	PCB-103	80.1	J	191	5.31	85.5	J	190	6.01	55.4	J	190	4.69
5	PCB-104	12.3	J	191	0.22	12.2	J	190	0.24	7.89	J	190	0.57
5	PCB-105	70.6		19.1	6.07	75.4		19.0	7.01	50.2		19.0	5.34
5	PCB-106	191	U	191	5.03	190	U	190	5.69	190	U	190	4.44
5	PCB-107/124	9.29	J	382	4.99	380	U	380	5.65	381	U	381	4.41
5	PCB-109	56.3	J	191	4.80	54.7	J	190	5.43	30.5	J	190	4.24
5	PCB-110/115	476		382	4.88	492		380	5.53	341	J	381	4.32
5	PCB-111	191	U	191	4.67	190	U	190	5.29	190	U	190	4.13
5	PCB-112	191	U	191	4.79	190	U	190	5.42	190	U	190	4.24
5	PCB-114	19.1	U	19.1	5.84	19.0	U	19.0	6.50	19.0	U	19.0	5.23
5	PCB-118	293		19.1	5.42	306		19.0	6.01	199		19.0	4.74
5	PCB-120	191	U	191	4.70	190	U	190	5.32	190	U	190	4.15
5	PCB-121	191	U	191	4.35	190	U	190	4.93	190	U	190	3.85
5	PCB-122	191	U	191	5.45	190	U	190	6.17	190	U	190	4.82
5	PCB-123	19.1	U	19.1	5.81	19.0	U	19.0	6.38	19.0	U	19.0	5.06
5	PCB-126	19.1	U	19.1	6.29	19.0	U	19.0	7.06	19.0	U	19.0	5.54
5	PCB-127	191	U	191	5.19	190	U	190	5.88	190	U	190	4.59
6	PCB-128/166	41.5	J	382	5.35	45.6	J	380	5.44	32.7	J	381	6.93
6	PCB-129/138/163	516	J	572	5.83	552	J	571	5.93	376	J	571	7.55
6	PCB-130	28.6	J	191	7.38	33.8	J	190	7.51	190	U	190	9.57
6	PCB-131	191	U	191	6.95	190	U	190	7.07	190	U	190	9.01
6	PCB-132	114	J	191	6.84	124	J	190	6.96	98.3	J	190	8.87
6	PCB-133	28.1	J	191	6.69	29.3	J	190	6.80	20.3	J	190	8.67
6	PCB-134/143	28.5	J	382	7.03	33.0	J	380	7.15	29.9	J	381	9.11
6	PCB-135/151	221	J	382	6.48	234	J	380	6.60	209	J	381	8.41
6	PCB-136	61.8	J	191	4.65	65.7	J	190	4.73	58.2	J	190	6.03
6	PCB-137	16.1	J	191	5.58	17.4	J	190	5.68	13.3	J	190	7.24
6	PCB-139/140	7.99	J <sup>2</sup>	382	5.93	380	U	380	6.03	381	U	381	7.68
6	PCB-141	50.8	J	191	6.48	53.4	J	190	6.59	45.1	J	190	8.40



**ESAT Generated Data Summary Table - Validated Results**

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8L25 Silver Lake Field Sample Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-1-8L25 Silver Lake Field Duplicate Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-0-8O30 Silver Lake Field Sample Surface Water 10/30/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL	Result	Flag	RL	EDL
6	PCB-142	191	U	191	7.20	190	U	190	7.33	190	U	190	9.34
6	PCB-144	191	U	191	6.17	8.39	J <sup>2</sup>	190	6.28	190	U	190	8.00
6	PCB-145	191	U	191	4.52	190	U	190	4.60	190	U	190	5.86
6	PCB-146	127	J	191	5.89	133	J	190	6.00	95.2	J	190	7.64
6	PCB-147/149	472		382	6.20	504		380	6.31	395		381	8.04
6	PCB-148	191	U	191	6.35	8.95	J	190	6.47	190	U	190	8.24
6	PCB-150	191	U	191	4.25	190	U	190	4.32	190	U	190	5.51
6	PCB-152	191	U	191	4.33	190	U	190	4.41	190	U	190	5.62
6	PCB-153/168	393		382	4.80	423		380	4.88	315	J	381	6.22
6	PCB-154	28.3	J	191	5.55	32.1	J	190	5.65	27.5	J	190	7.19
6	PCB-155	191	U	191	4.41	190	U	190	4.36	190	U	190	4.14
6	PCB-156/157	53.7		38.2	1.32	56.8		38.0	1.29	29.1	J	38.1	0.57
6	PCB-158	29.4	J	191	4.45	32.1	J	190	4.53	23.4	J	190	5.77
6	PCB-159	4.21	J <sup>2</sup>	191	0.98	4.72	J	190	0.95	2.07	J	190	0.39
6	PCB-160	191	U	191	4.64	190	U	190	4.72	190	U	190	6.01
6	PCB-161	191	U	191	4.81	190	U	190	4.90	190	U	190	6.24
6	PCB-162	3.39	J <sup>2</sup>	191	0.94	4.13	J	190	0.90	1.34	J <sup>2</sup>	190	0.37
6	PCB-164	22.6	J	191	4.97	22.3	J	190	5.06	14.4	J	190	6.45
6	PCB-165	191	U	191	5.01	190	U	190	5.10	190	U	190	6.50
6	PCB-167	24.3		19.1	0.96	26.9		19.0	0.94	11.6	J	19.0	0.40
6	PCB-169	19.1	U	19.1	1.06	19.0	U	19.0	1.01	19.0	U	19.0	0.45
7	PCB-170	138	J	191	1.43	150	J	190	1.51	70.2	J	190	0.80
7	PCB-171/173	40.9	J	382	1.42	42.4	J	380	1.50	23.0	J	381	0.79
7	PCB-172	33.8	J	191	1.42	35.8	J	190	1.50	19.1	J	190	0.79
7	PCB-174	130	J	191	1.48	135	J	190	1.57	75.8	J	190	0.83
7	PCB-175	5.40	J	191	0.43	4.81	J <sup>2</sup>	190	0.38	4.03	J	190	0.30
7	PCB-176	14.4	J	191	0.31	15.8	J	190	0.27	10.7	J	190	0.22
7	PCB-177	105	J	191	1.43	107	J	190	1.52	60.1	J	190	0.80
7	PCB-178	46.3	J	191	0.46	45.7	J	190	0.40	27.4	J	190	0.32
7	PCB-179	57.6	J	191	0.34	60.0	J	190	0.30	49.4	J	190	0.24
7	PCB-180/193	317	J	382	1.11	333	J	380	1.18	168	J	381	0.62
7	PCB-181	191	U	191	1.24	190	U	190	1.32	190	U	190	0.70
7	PCB-182	0.52	J	191	0.41	1.60	J	190	0.36	1.19	J <sup>2</sup>	190	0.28
7	PCB-183	71.9	J	191	1.17	80.1	J	190	1.24	45.2	J	190	0.65
7	PCB-184	191	U	191	0.35	190	U	190	0.31	190	U	190	0.24
7	PCB-185	191	U	191	1.26	190	U	190	1.33	6.31	J	190	0.70
7	PCB-186	191	U	191	0.33	190	U	190	0.29	190	U	190	0.23
7	PCB-187	194		191	0.41	211		190	0.36	140	J	190	0.29
7	PCB-188	1.37	J <sup>2</sup>	191	0.51	1.61	J <sup>2</sup>	190	0.44	190	U	190	0.23
7	PCB-189	7.91	J <sup>2</sup>	19.1	0.24	9.44	J	19.0	0.27	3.12	J <sup>2</sup>	19.0	0.11
7	PCB-190	26.3	J	191	0.94	27.3	J	190	0.99	14.0	J	190	0.52
7	PCB-191	4.98	J	191	1.00	6.31	J	190	1.06	2.24	J	190	0.56
7	PCB-192	191	U	191	1.05	190	U	190	1.11	190	U	190	0.58
8	PCB-194	93.7	J	191	0.39	101	J	190	0.41	33.5	J	190	0.18
8	PCB-195	34.4	J	191	0.40	35.1	J	190	0.42	10.8	J <sup>2</sup>	190	0.18
8	PCB-196	39.5	J	191	0.34	39.3	J	190	0.32	15.3	J <sup>2</sup>	190	0.37
8	PCB-197	3.53	J	191	0.23	3.54	J	190	0.21	0.83	J	190	0.25
8	PCB-198/199	79.8	J	382	0.36	85.8	J	380	0.33	40.2	J	381	0.39
8	PCB-200	8.62	J	191	0.28	8.96	J	190	0.26	4.34	J	190	0.31
8	PCB-201	9.39	J	191	0.26	9.79	J	190	0.24	4.66	J	190	0.28
8	PCB-202	15.1	J	191	0.35	16.1	J	190	0.31	7.37	J	190	0.31
8	PCB-203	40.0	J	191	0.33	43.5	J	190	0.30	22.9	J	190	0.35
8	PCB-204	191	U	191	0.26	190	U	190	0.24	190	U	190	0.29
8	PCB-205	191	U <sup>3</sup>	191	0.29	5.46	J	190	0.31	2.67	J	190	0.16
9	PCB-206	24.0	J	191	1.08	23.9	J	190	1.21	11.6	J	190	0.31
9	PCB-207	6.06	J <sup>2</sup>	191	0.63	4.95	J	190	0.70	190	U <sup>3</sup>	190	0.17

# ESAT Generated Data Summary Table - Validated Results

Site: General Electric Co. Lab: TestAmerica Sacramento Method 1668A Analysis: 209 CB Congeners

Sample No.: Sample Location: Sample Type: Matrix: Collection Date: Dilution Factor: % Moisture: Units:		SL-SW000059-0-8L25 Silver Lake Field Sample Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-1-8L25 Silver Lake Field Duplicate Surface Water 7/25/2018 1.0 N/A pg/L				SL-SW000059-0-8O30 Silver Lake Field Sample Surface Water 10/30/2018 1.0 N/A pg/L			
CL#	Compounds	Result	Flag	RL	EDL	Result	Flag	RL	EDL	Result	Flag	RL	EDL
9	PCB-208	4.27	J	191	0.70	4.03	J <sup>2</sup>	190	0.78	190	U <sup>3</sup>	190	0.19
10	PCB-209	3.11	J <sup>2</sup>	191	0.28	2.45	J	190	0.26	1.59	J	190	0.030
	Total MoCB	13100	J			13400	J			10300			
	Total DiCB	76500	J			76800	J			47500	J		
	Total TrCB	39000	J			40100	J			20600	J		
	Total TeCB	14000	J			14600	J			9270	J		
	Total PeCB	4010	J			4200	J			2850	J		
	Total HxCB	2270	J			2440	J			1800	J		
	Total HpCB	1200	J			1270	J			720	J		
	Total OcCB	324	J			349	J			143	J		
	Total NoCB	34.3	J			32.9	J			11.6	J		
	DeCB	3.11	J			2.45	J			1.59	J		
	Total PCBs <sup>^</sup>	151000	J			153000	J			93200	J		
	Total TEQ#	0.0145	J			0.0152	J			0.0093	J		

## TIER 2/S4VM DATA VALIDATION QUALIFIER COMMENTS:

EDL - Estimated Detection Limit. For Congener Method 1668A it is typical to report the EDL rather than an MDL. The EDL is a sample-specific detection limit based on the noise present in the sample at the retention time of an undetected analyte, and is more representative of what can be detected in that sample. EDL is the concentration of a given analyte required to produce a signal with a peak height of at least 2.5 times the background noise level.

<sup>^</sup> Total PCBs are the sum of the total homologues.

# The Toxic Equivalent concentrations are calculated with the Toxicity Equivalency Factors (TEFs) found in "The 2005 World Health Organization Re-evaluation of Human and Mammalian Toxic Equivalency Factors for Dioxins and Dioxin-like Compounds, Society of Toxicology, July 7, 2006. The TE values are calculated using the final validated data and include the positive results and estimated values. The TE values are estimated (J) when any individual congener is estimated. The TE calculations do not include RL values.

J - Sample concentrations reported below the laboratory reporting limit are flagged (J) on the Data Summary Table as estimated values with no superscripts.

<sup>1</sup> Sample concentration exceeds the instrument calibration range; estimate (J) the results for PCB 4 and PCB 19 in samples SL-SW000059-0-8L25 and SL-SW000059-1-8L25 as well as PCB 4 in sample SL-SW000059-0-8O30.

<sup>2</sup> Congener did not meet the ion abundance ratio identification criteria. The laboratory adjusted the EMPC concentration using the theoretical ion abundance ratio; estimate (J) the affected results.

<sup>3</sup> Blank contamination; the positive results for PCB 11 in all samples; PCB 205 in sample SL-SW000059-0-8L25, PCB 207 and PCB 208 in sample SL-SW000059-0-8O30 are reported as non-detects(U) at the RL.

<sup>4</sup> Congener did not meet signal-to-noise identification criteria; the results for PCB 2 in samples SL-SW000059-0-8L25 and SL-SW000059-1-8L25 are reported as non-detects (U) at the RL.



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